NOVEMBER | 1955

products finishing

FINISHES ON METAL PRODUCTS

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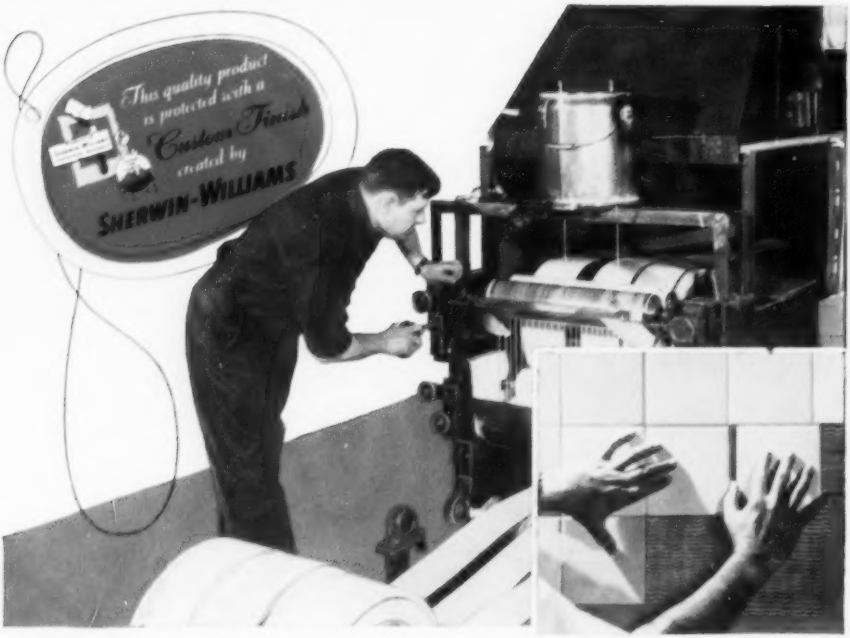
PRODUCTS FINISHING



How to paint a bathroom wall
12 FEET A MINUTE!

What kind of finish can be put on aluminum wall tile that will withstand stamping and forming *after* painting . . . resist moisture, heat, chipping and marring . . . compare favorably with much heavier and costlier types of tile in beauty and durability?

Metal Tile Products Co., Hastings, Michigan, put these problems up to Sherwin-Williams technicians. Special formulations were developed which are rolled on aluminum strip continuously at the rate of 12 feet a minute, then baked, stamped and formed. Result: a product which has experienced a phenomenal growth in sales . . . required repeated plant expansion . . . promises to require more.

Sherwin-Williams experience in prefinishing metals is one of many types of finishing help available. Investigate—write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio. (In Canada: 2875 Centre St., Montreal.)

SHERWIN-WILLIAMS

Industrial Finishes

PRODUCTS FINISHING **NOVEMBER, 1955**

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2	15	28	41	54	67	80	93
3	16	29	42	55	68	81	94
4	17	30	43	56	69	82	95
5	18	31	44	57	70	83	96
6	19	32	45	58	71	84	97
7	20	33	46	59	72	85	98
8	21	34	47	60	73	86	99
9	22	35	48	61	74	87	100
10	23	36	49	62	75	88	101
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12	25	38	51	64	77	90	103
13	26	39	52	65	78	91	104

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STREET_____

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Your Monthly Source For Finishing Ideas

PRODUCTS FINISHING **NOVEMBER, 1955**

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117	130	143	156	169	182	195	208	221	234	247

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THE MORE KNOW-HOW YOU PUT IN THE BARREL, THE MORE PROFIT YOU TAKE OUT

Useful facts gathered during Oakite's years of experience in barrel finishing are packed like #12 stones in this 10-page booklet covering such subjects as:

PRECLEANING—Good tank cleaning; Good barrel cleaning; Good rinsing saves money.

CUTTING DOWN, DEBURRING—Good solutions; Abrasive media, water and work ratios, etc.

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FREE For your copy of "*May I put my head in your finishing barrel?*" just write or mail the coupon.

SPECIALIZED INDUSTRIAL CLEANING

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MATERIALS · METHODS · SERVICE

OAKITE PRODUCTS, INC. 20 Rector St., New York 6, N. Y.

Send me a **FREE** copy of your booklet on Barrel Finishing.

NAME _____

COMPANY _____

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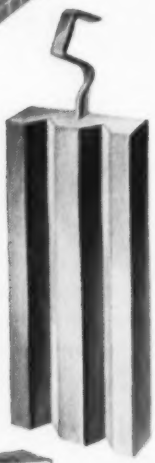
Technical Service Representatives in Principal Cities of U.S. and Canada

For more data circle **105** on Reader Service Card

FILTER OUT anode metal losses!

Here's a tip on how to save anode metal: *Keep your plating bath clean.* You'll have fewer rejects . . . better finish . . . longer mileage out of every anode.



Start CLEAN . . . Stay CLEAN

. . . by using Red Label Darco® S-51 regularly. It's the activated carbon especially made for taking harmful impurities out of plating baths. It wets easily, makes up into slurries readily, minimizes carbon dust in your plant.

Get Red Label Darco S-51 from your local supplier. He has it in convenient 10-lb. and 50-lb. cartons. Be sure to ask for it by name!

Write for a copy of the article "Filter Out Your Plating Rejects," by Ezra A. Blount

Chemicals Division

ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE, U.S.A.

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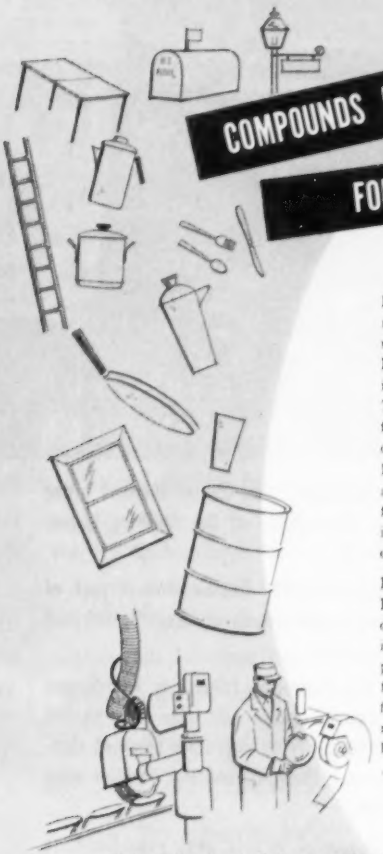
H-VW-M—the manufacturer with...



COMPOUNDS DESIGNED EXCLUSIVELY FOR ALUMINUM FINISHING!

H-VW-M long ago anticipated today's tremendous popular demand for aluminum products—by developing special compounds like Liquimatic 728 to suit the unusual characteristics of this soft metal. Heavy-duty Liquimatic 728 is formulated *expressly* for aluminum finishing. It's a true double duty compound, combining special cutting qualities with excellent coloring properties. And it works so clean, and cleans so easily that it's especially suited for buffing before anodizing. For color anodizing, too, it brings out deeper, richer tones every time.

Liquimatic 728 is just one of a full line of H-VW-M liquid and bar compounds developed solely for use in aluminum finishing. And it's not only compounds that H-VW-M supplies to make aluminum finishing easier . . . faster . . . *better*. In the H-VW-M line you'll find anodizing equipment—automatic buffing machines and other equipment—all types of buffs—everything you need, in fact, from start . . . *to finish!*

Write today for bulletins describing the H-VW-M equipment, supplies and compounds designed especially for aluminum finishing.

PLATEMANSHIP

Your H-VW-M combination—of the most modern tooling and development laboratory—of over 50 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

H-VW-M

HANSON-VAN WINKLE-MUNNING COMPANY

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INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

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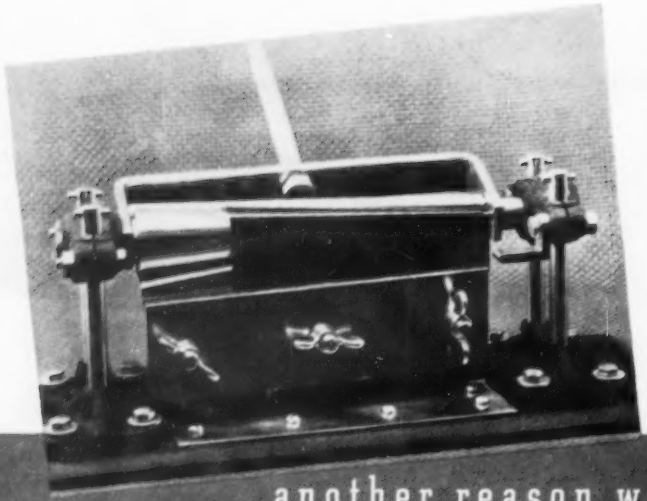

another reason why it's better because it's EGYPTIAN

Egyptian Lab Technicians use this modern equipment, the Conical Mandrel Tester after each drying period to evaluate the distensibility of the finishing system they specially formulate for your product.

Most organic coatings when freshly applied are fairly flexible. The purpose of the Conical Mandrel Tester is to help determine the degree of flexibility retained after aging.

Now, your experienced, capable Egyptian Lab Technician takes over to interpret this scientific test data into a finishing formula ideally suited for your product . . . he has the "Know How" that can put flexibility or any other specified characteristic into your finishing system and keep it there . . . **another reason why . . . "it's better because it's EGYPTIAN."**

Invite an Egyptian Industrial Finishes Specialist to talk over your finishing problem. No obligation of course.

EGYPTIAN
INDUSTRIAL FINISHES

The EGYPTIAN LACQUER MANUFACTURING CO.

Box 444, Newark 1, New Jersey • Plants: South Kearny, N. J.—Lafayette, Ind.

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products finishing

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contents

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Now, two strategic locations
CORTLAND, NEW YORK
CAMBRIDGE CITY, INDIANA

bring you
- Faster Prepaid Delivery —
- Lowest Cost
- Localized Custom Service

POTTER's reputation for highest quality thinners at lowest cost has gained us over 600 satisfied users.
- *Specialization — over 30 years experience in making only thinners.*
- *Large Sales Volume*
- *Streamline Overhead*
- *Solvent bought in tank car lots only*

POTTER'S THINNERS ARE EASY TO TEST. Just mix with your lacquer and observe results. If it mixes all right and dries all right — it is all right.

☐ Check here, give your name and address and mail TODAY for FREE "tailor-made" sample.

The product we make is _____

We use Lacquer Thinner for
☐ Spray ☐ Dip ☐ Cleaning ☐ Other _____

We use Lacquer Thinner on
☐ Metal ☐ Wood ☐ Other _____

We want it to dry
☐ Fast ☐ Slow ☐ Medium

Name _____

Address _____

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products finishing

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products finishing
431 Main St. Cincinnati 2, Ohio

You Are Paying

FOR A... Hammond JUNIOR AUTOMATIC

WHY NOT USE IT!

Model SE2SF with Hammond Polishing Lathe

Finishing costs are high and will go higher as buyers insist on better finishes — they're doing it. There is only one answer to this situation — FASTER AND BETTER FINISHING EQUIPMENT.

Polishing by hand is hard and slow work. With a Hammond Junior Automatic the operator merely loads and unloads, resulting in high production and uniform finishes throughout the day.

Hammond Junior Automatics soon pay for themselves. If you are interested in reducing finishing costs—send one finished and several rough samples for complete engineering report — No Obligation.

Hammond Machinery Builders INC

1622 DOUGLAS AVENUE • KALAMAZOO 54, MICHIGAN

For more data circle 110 on Reader Service Card

Is your vapor degreasing solvent giving you these

7 benefits

ENGINEERED MP SERVICE

1. Does it help *prevent* corrosion?
2. Do you get fast drying of parts?
3. Is vapor permeation in the surrounding air low enough to be safe for workers?
4. Do you get a complete cleaning job . . . *or does condensation stop before parts are thoroughly clean?*
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6. Do you have minimum loss of solvent due to vapor dragout?
7. Is your solvent giving you the best possible cleaning job at high production rates?

WITH **PHILLSOLV** YOU GET ALL THESE ADVANTAGES

PHILLSOLV has everything you want for a faster, more efficient cleaning operation. If your present solvent can't meet the test, it will pay you to check into PHILLSOLV. Or if you're contemplating a degreasing operation, PHILLSOLV is the solvent to use. Check with your Phillips man today!

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Phillips *MANUFACTURING COMPANY*
3457 W. TOUHY AVENUE, CHICAGO 45, ILLINOIS

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For more data circle 111 on Reader Service Card

DON'T MISS THE BOAT!

MICCROSOL SPRAY S-2003 IS READY . . . to show YOU the way to profitable spray jobs

You can apply S-2003 with conventional spray equipment.

You can apply 60 mils thickness in one application without sagging of material. If multiple coats are required, a short cure time is all that's needed between applications. A contrasting color can serve for layer identification, if desired.

You can use S-2003 in all plating baths. It has the same toughness—chemical, corrosion, and abrasion resistance as Miccrosol E-1003. Our adhesive systems provide outstanding adhesion to metal surfaces.

Solvent additives are not necessary. S-2003 is 100% solids and is sprayed as received. Time consuming and expensive adjustments are unnecessary. Problems of material instability and film cracking are eliminated. There is no solvent loss and less operator fatigue with Miccrosol Spray S-2003.

It's the ideal plastisol for spray applications.

Tanks Ducts and other Equipment

Developed and manufactured by experienced platers

* WRITE FOR PARTICULARS ON COMPANY LETTERHEAD

MICHIGAN CHROME *and Chemical Company*

8615 Grinnell Avenue • Detroit 13, Michigan

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LYFANIZE!

and ECONOMIZE...

with DURABILITY...

LYFANITE "A"
FOR ALUMINUM ALLOYS

LYFANITE "Z"
FOR IRON AND STEEL

Write for Bulletin 55-133

LYFANITE PROVIDES A PHOSPHATE COATING THAT ASSURES EXCELLENT PAINT BONDING PROPERTIES AND RESISTANCE TO CORROSION.

N. B. Have you heard about the Latest Phosphating Development, PHOSTEEM? *Send for Bulletin 55-137.*

Made by the Manufacturers of Metalprep and other Prep Products

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Southeastern Distributor:
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Charlotte, North Carolina

6561 Benson St., Detroit 7, Mich.

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Los Angeles, Cal.
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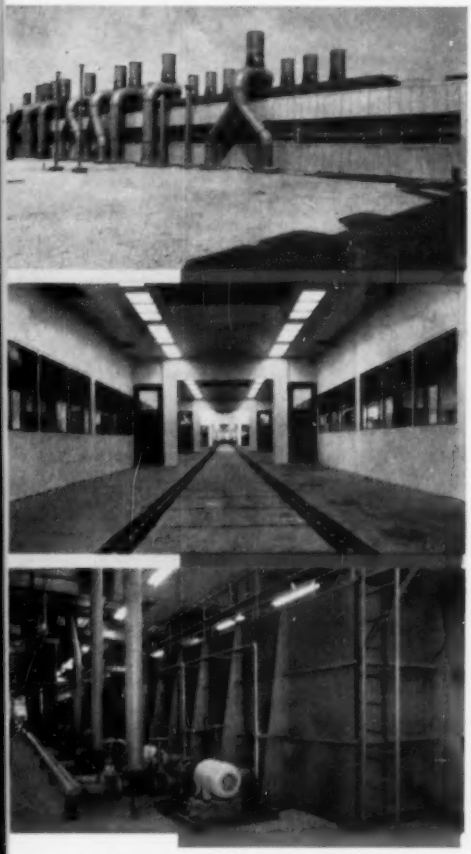
Paint Processing Equipment by Peters-Dalton –part of the CHRYSLER *Forward* Look

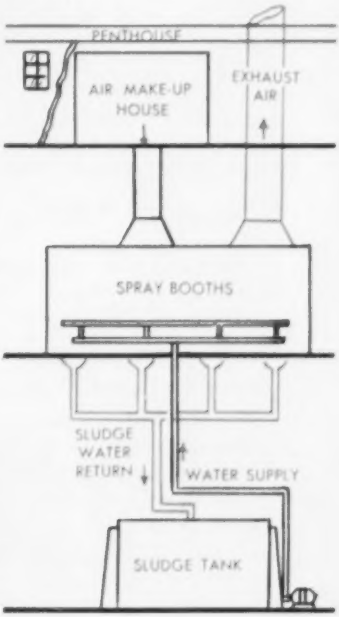


Multi-million dollar expansion program at Chrysler-Jefferson Plant, Detroit, includes the installation of special high production paint process equipment—designed, engineered, fabricated and erected by Peters-Dalton.

Roof level includes exhaust fans and ducts along with fresh air make-up house.

Second floor level contains paint finishing production lines and spray booths.

First floor level contains fresh water pumping system and sludge tanks for paint separation.



To fill an important role in the huge expansion program undertaken at the Chrysler-Detroit Plant, the requirements for a vast paint processing equipment installation were met by Peters-Dalton. This is another case of an outstanding challenge solved by P-D engineers. The equipment had to be designed to fit within the structure being built by Chrysler and to conform to layouts made by their plant engineers. It operates on three levels and provides the special services so necessary for maintaining its part in the highly accelerated production program at Chrysler.

Whether your needs are for an installation comparable to this or for one of a basically simple nature, depend on the more than quarter century of Peters-Dalton engineering experience. Fnd out for yourself—just write, wire or phone.

Representatives in Principal Cities

Peters-Dalton INC.
17900 Ryan Road
DETROIT 12, MICHIGAN

- *Hydro-Whirl Paint Spray Booths*
- *Industrial Washing Equipment*
- *Drying and Baking Ovens*
- *Hydro-Whirl Dust Collecting Systems*

NEW!
TUMBLEX "N" Abrasive
A natural for better barrel-finishing

Latest tumbling abrasive — natural flint stone — offers new "TOUCH of GOLD" benefits — brings finish up and costs down

Tumblex "N" Abrasive is Nature's own tumbling abrasive. Carefully selected and graded by Norton, it opens up new possibilities for barrel-finishing applications such as light deburring, breaking sharp edges, polishing and burnishing and other operations where little actual cut is required.

Tumblex "N" has proved particularly valuable in bringing out the most desirable color of the finished part. Metals on which it has proved its ability to give an excellent finish include zinc, brass, copper, aluminum and various forms of steel, including stainless.

Its rounded, uniform shape and very low breakdown ratio prevent wedging, permit longer cycles and reduce the need of rescreening.

Another big Tumblex "N" advantage is extremely uniform cutting action. This assures the same uniform finishing in load after load. Also, it enables close regulation of cut; for example, by adding measured quantities of loose abrasive grain to Tumblex "N" you can speed up the rate of cut with little effect on the life of this natural abrasive. Exact formulas for best results in job or production tumbling are easily worked out.

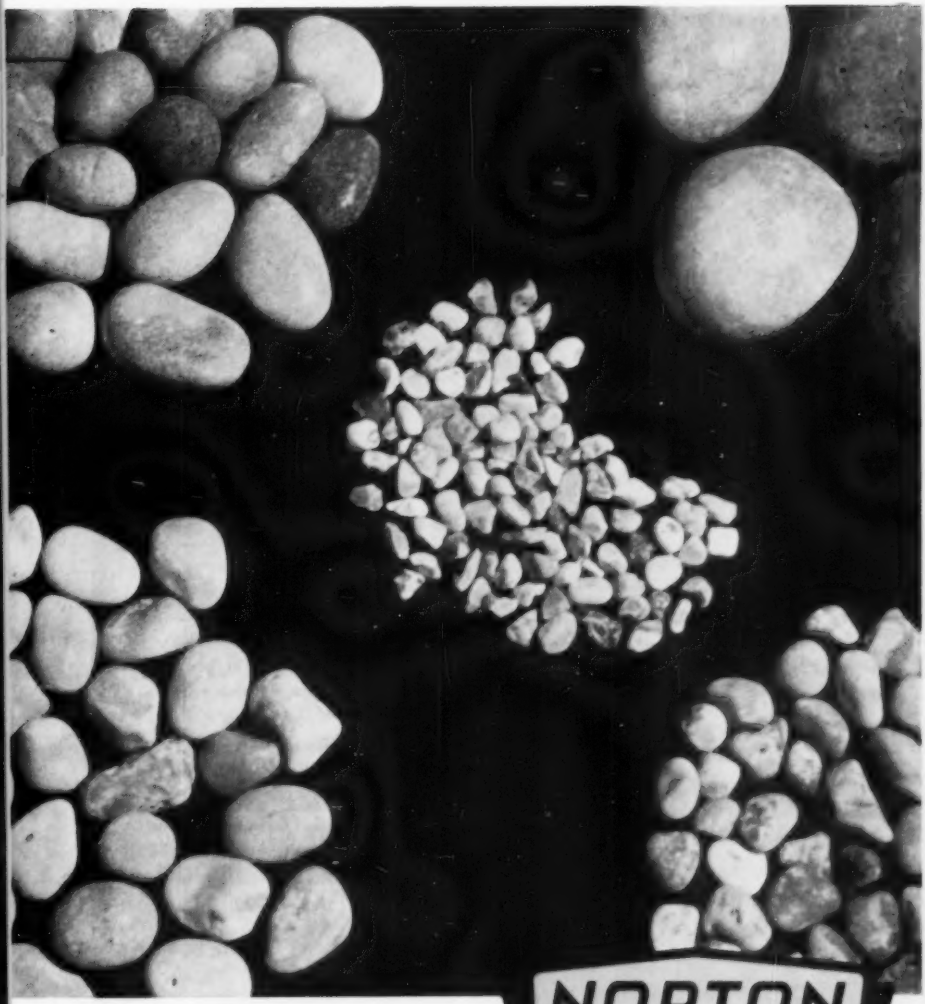
Norton customers who have tested Tumblex "N" Abrasive report:

- ***"Very good luster with no noticeable wear."***
- ***"Fine performance. Very little breakdown. Reordering 700 pounds of sizes 2½T and 3½T."***
- ***"Color O.K. on both zinc and brass."***
- ***"Very long life. Gave excellent color on stainless steel."***
- ***"A good polishing stone on aluminum."***

Send Your Work Samples

Let us demonstrate in our newly enlarged Sample Processing Department how Tumblex "N" Abrasive can give the value-adding "Touch of Gold" to your product quality and cut your barrel-finishing time and costs. NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone directory, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass. G-298

DETROIT 32, MICHIGAN
Hydro-Whirl Dust Collecting Systems



PROCESSED BY NATURE and offered exclusively by Norton, the new Tumblex "N" Abrasive comes in sizes ranging from 3/16" by 3/8" to 1 5/8" by 2 1/2".

NORTON
ABRASIVES
Making better products... to make your products better

NORTON COMPANY: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING DIVISION: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes
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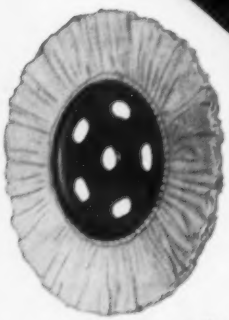
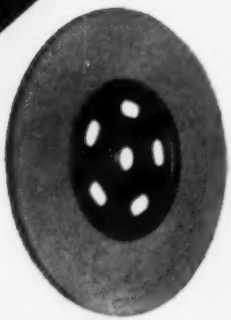
FORMAX

the Perfect Combination

FROM START TO FINISH





ZIPPO CLOTH BUFFS

These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

BUFFING COMPOUNDS

Formax produces a complete line of buffing compounds in bar, tube and liquid form.

Our extensive manufacturing, laboratory and testing facilities are at your disposal.

ZIPPO SISAL BUFFS

You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

Other Formax products include the well-known C-20 Flexible Contact Wheels and F-26 Abrasive Belt Grease Stick.

Descriptive Catalogs Sent on Request

FORMAX MFG. CORP.

DETROIT 7, MICHIGAN

"THE FOUR McALEERS"

For more data circle **116** on Reader Service Card

Filters Paint... Lacquer... Varnish...

from Paint Spray Booth Wash Water

Delpark AUTOMATIC Filtration

ELIMINATE . . . TANK CLEANING . . . ELIMINATOR CLEANING . . .
DOWN TIME . . . PLUGGED SPRAY NOZZLES . . . MAINTENANCE

Delpark Filtration of paint spray booth wash water saves money.

Filtration of paint from the wash water is accomplished by moving matted paint over a weir in the tank reservoir into the filter. Deactivated paint is deposited on the filter medium—the water passes through cleaned and ready for recirculation.

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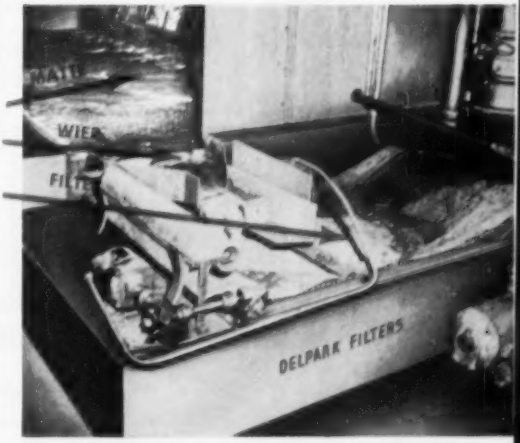

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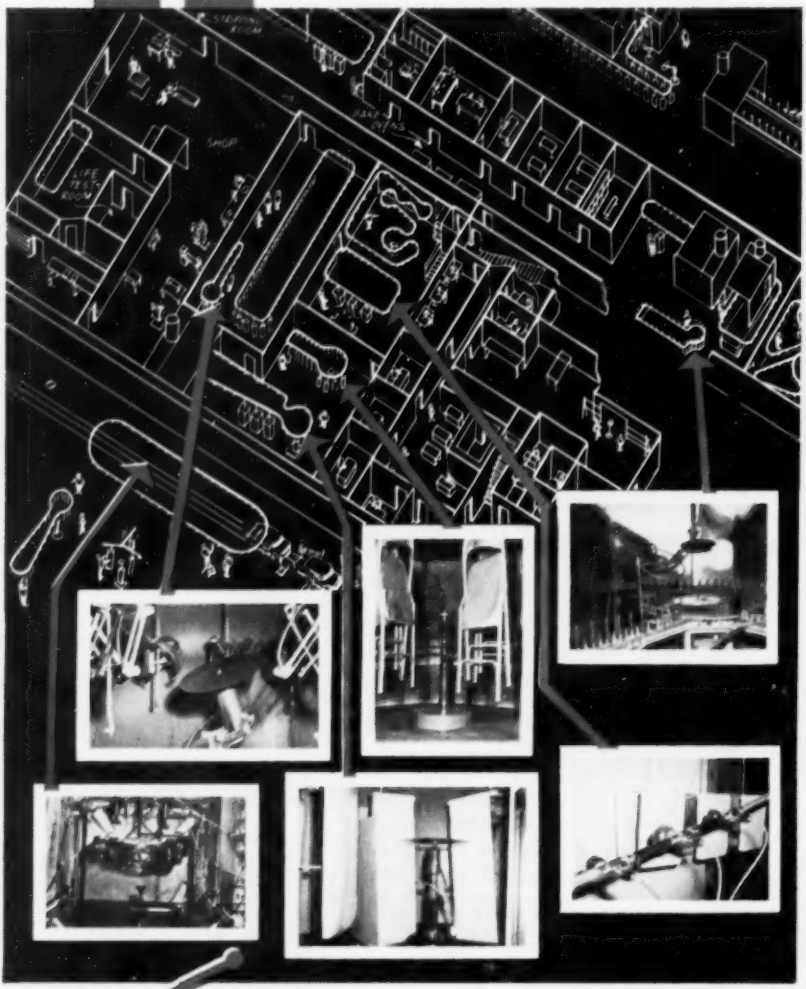

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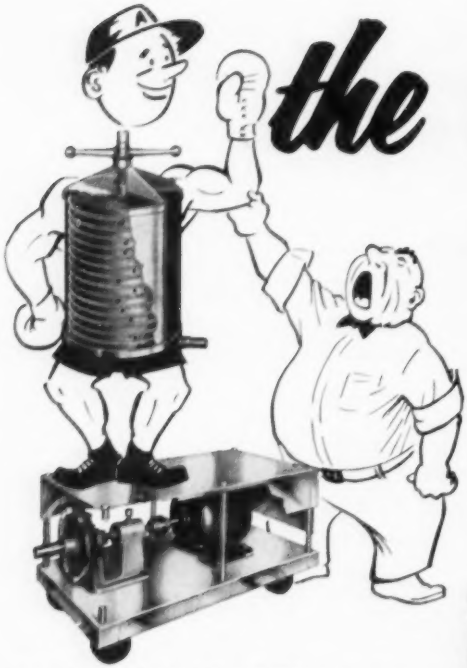

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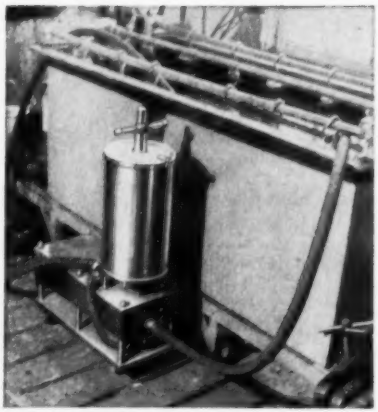

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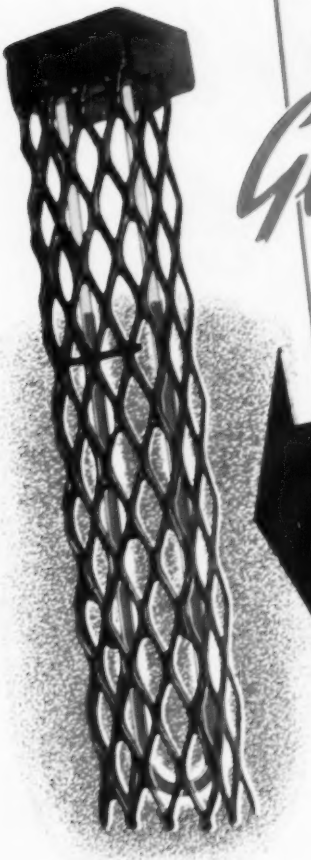

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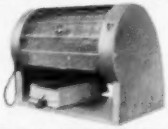

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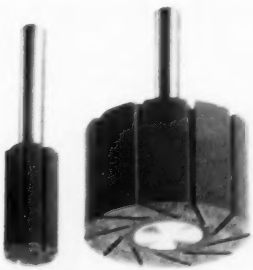

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Vol. 20, No. 2

NOVEMBER, 1955

. . . . editorial . . .

Better Finishes; Better Methods

Opinions vary as to what makes a business grow.

Certainly, to be successful, a company must manufacture good products and provide good service to customers. Certainly it must have an aggressive, alert sales and production management team.

Very recent business history emphasizes the fact that good products, to be salable in today's competitive "buyer's" market, must also be well designed and attractively finished. The 1955 cars and home appliances were brilliant with colors, gold and chrome. The 1956 models show the same trend toward the use of more and different colors. A beautiful finish won't sell a poor product, but it will increase sales of and customer satisfaction with a good one.

The selection of the proper finish or combination of finishes for a metal product is important; equally important is the selection of the most efficient finishing system. Since the finishing cost is usually a relatively small percentage of the total cost, there is a tendency not to analyze and keep detailed cost records on all finishing processes. Hence, there is not always an appreciation of the improvement which better equipment would make possible. Thus, an opportunity to reduce unit cost by mechanizing and streamlining finishing operations is neglected. It is of vital importance to finishing executives and engineers to keep abreast of new and improved methods, so that their companies may profit by taking advantage of technological progress in the Finishing Industry.

Attractive, durable finishes, efficiently applied, are essential to product sales and growth of a business. Finish and equipment suppliers stand ready to work with plant executives and engineers in selecting and producing better finishes for today's products.

Ezra A. Blount

—EDITOR

Galvanized Sheets Have New Place In Product Finishing Today

By N. E. HAYS
Product Engineer
Research Laboratories
Armco Steel Corporation

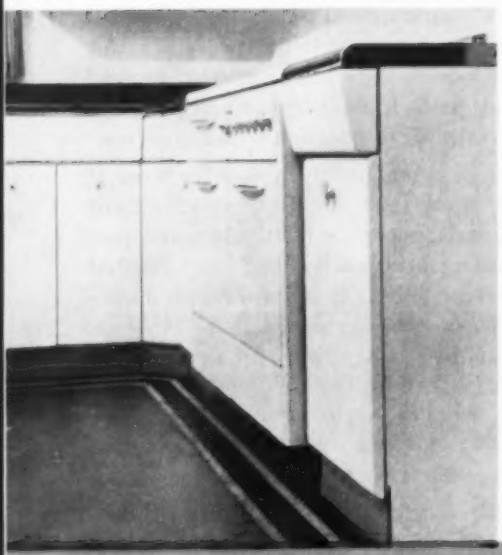


Fig. 1—Phosphatized electroplated zinc coatings aid drawing, protect unpainted surfaces. (Photograph courtesy Avco Mfg. Corporation.)

WORK-HORSE of the sheet steel family, the galvanized sheet, has discovered that it can run as well as pull a plow. This time-proved material, which has served so well on barn roofs and buildings for generations, is now being beautified by metal fabricators to the point where its eye appeal is competitive with many other materials and finishes.

Steadily rising finishing costs have spurred fabricators to effect cheaper production, while stiffer competition is demanding a better product. Surprisingly enough, fabricators have found both answers in phosphatized zinc-coated sheets and strip. Zinc's resistance to red rust gives adequate corrosion protection

". . . newer class is composed of sheets that are electroplated with zinc . . ."

to hidden surfaces. Where the beauty of paint is desired, a phosphate coating provides a secure anchor for paints on visible surfaces. Experience shows that the protection afforded by the combined coatings offers excellent value per year of service.

Mill-treated sheets fall into two classifications. The older is hot-dip coated (galvanized) which gives a normal zinc coating of about 1.25 oz./sq. ft. This can be varied up to about 2 oz. for special surface or corrosion requirements. The sheets or strip also can be cold rolled after coating to meet surface requirements. The Armco Zincgrip coating process and similar methods have eliminated flaking and peeling. This special zinc coating offers many years' resistance to red rust. The phosphate coating over the zinc gives good paintability and assures long paint life.

The newer class is composed of sheets that are electroplated with zinc and then phosphate-coated. This thinner zinc coating gives up to 10 per cent as much protection as hot-dip coating and is intended to prevent rust before shop painting.

Fig. 2—Truck trailers utilize electroplated and hot-dipped zinc coated steel for side panels, and hot-dipped zinc coated steel for roofs. Both are phosphatized for one-coat finishing and paint adherence. (Photograph courtesy Trailmobile, Incorporated, Cincinnati, Ohio.)

"The phosphate coating provides an excellent base for paint with maximum paint adherence."

Resistance to red rust is about the same as a prime coat of paint. The zinc does not peel, and the surface is equal to that of cold rolled steel. The phosphate coating provides an excellent base for paint with maximum paint adherence. Use of either or both of these sheets in fabricated products enables the manufacturer to meet phosphatizing specifications. **Phosphate-treated zinc-coated sheets** are shipped clean and dry from the producer and thus are in prime painting condition. The fabricator should make every effort to preserve this surface and so simplify and perfect his finishing. He should also guard against mechanical damage to the surfaces. Mechanical damage is fairly obvious as scratches, digs, and the like. Chemical damage includes corrosion caused by poor shipping or storage conditions, drawing compounds or harsh cleaning chemicals. When it is possible to observe these rules, finishing becomes greatly simplified. The cleaning operation itself should also be directed at preserving the phosphate coating. The zinc coating needs no special attention. Drastic alkalis or acid washes must not be used. Solvents or an emulsion spray are recommended for this purpose. Occasionally a mild alkali can be used if control is effective.

Fig. 3—This peel-off drawing shows the film structure of painted zinc coated, phosphate treated sheet steel. (Photograph courtesy the Armco Steel Corporation, Middletown, Ohio.)

Drawing and forming lubricants should be kept as thin as possible. Consideration should be given to the many articles that have been written describing excellent drawing properties of phosphate-coated steels. The phosphate coating tends to hold the lubricant so that it is drawn deeper into the die. This may enlarge the field of choice of lubricants to include lighter, more easily cleaned materials. Petroleum-base lubricants lend themselves to simple solvent cleaning, provide some corrosion protection during storage, do not dry to hard films, and are readily obtainable. Some new plastic resin compounds have the same virtues, and can be removed with hot water or mild solutions of alkali.

Dry soaps and other similar types of lubricants that require heating to dry the film should be viewed with

suspicion. Rimming steels tempered to meet specified drawing requirements are fully aged immediately at temperatures of about 200 deg. F. Much strain and breakage can be eliminated by remembering that any heating is an enemy of drawability. Also the very term "aging" indicates that tempered rimming steel sheets should not be stored too long because the same changes occur in long-time storage. Phosphate-treated zinc-coated sheets usually have superior drawing qualities but are as much subject to aging as any other tempered rimming steel. Where the use of dry soap is highly desirable, or when storage time is uncertain, the steel supplier should be advised. He can determine whether the use of non-aging steel is justified. This steel resists the effect of heating or long storage.

Resistance welding of zinc-coated phosphatized sheets should receive special attention to keep down the area of surface damage that otherwise might require metal finishing. Gratifying results can be obtained by the use of properly shaped spot-welding electrodes. The use of flat tip on the exposed side and a ¼ to ¾-inch radius dome tip on the unexposed side will give point contact. The same is true when both tips are contoured to 2-3-inch R domes. The shape and polish of these tips can be best maintained with worn emery paper in a racket tool or wrapped around a file. The American Welding Society Class 2 type gives excellent results because of increased hardness and resistance to mushrooming. Up to 10 per cent increased heat and pressure may be required.

Elaborate cooling is justified because with it the surfaces to be finished are disturbed the least. The consideration of cooling should include weekly inspection of the jets in the spot welder tips and a temperature check of incoming and outgoing water. Jets are frequently broken off, pinched or removed. Incoming water temperatures can easily reach 80 deg. F. during summer operation. Improved welds can be made when temperature is kept below 60 deg. F.

Quantity of water should be regulated so that the temperature rise in the water is of the order of 5 deg. F. Refrigeration may be necessary to ensure these conditions. If so, enough capacity should be installed to permit operation as low as 30 deg.

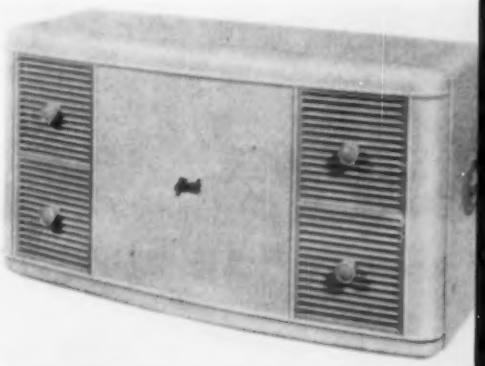


Fig. 4—Steel parts of air conditioners exposed to condensate are protected by heavy zinc coatings, phosphatizing and baked enamel. (Photo courtesy York Corporation.)

F. This has been proved very effective on aluminum and aluminum-coated steel.

The same benefits of less pickup, less metal finishing and a higher percentage of sound welds should accrue on any coated steel. Seam welding should include the same considerations as for spot welding. Copious water cooling and the use of a knurled wheel drive to eliminate any build-up that occurs on the welding wheel should prove to be beneficial.

Soldering is best accomplished by using a non-corrosive type of flux. These fluxes are not active until heated by torch or iron. This enables the operator to remove excess flux with a simple water rinse. Excess flux beyond the heated zone will not destroy the protective coatings. The "wetting" or "sweating" properties of this type of flux can be adjusted to any particular job by adding up to 25 per cent denatured alcohol. Very high speed operations may require the addition of a small amount of hydrochloric acid (muriatic), or ammonium chloride (sal-ammoni-

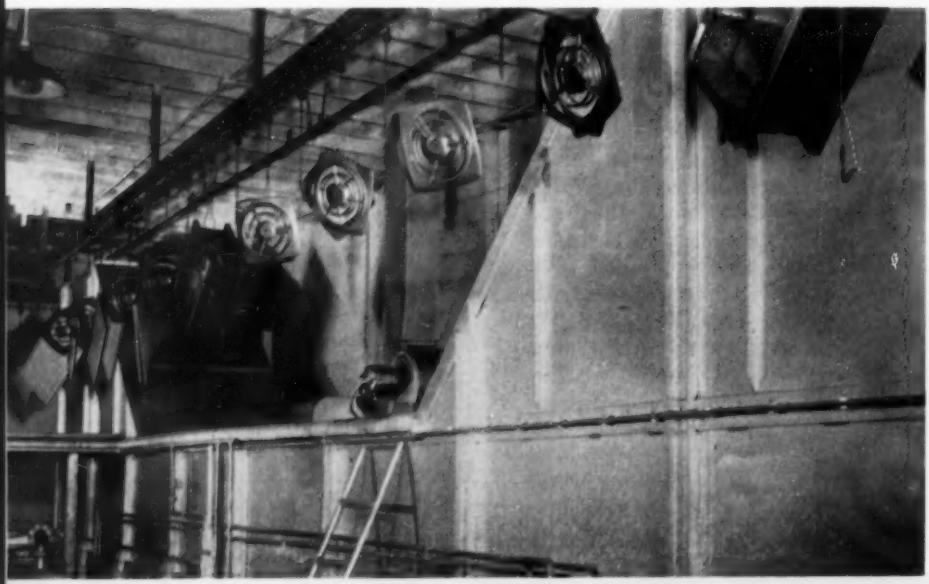


Fig. 5—A large degreasing unit for vapor and liquid phase removal of shop contaminants. (Photograph courtesy the Miami Cabinet Division, Philip Carey Company, Middletown, Ohio.)

ac). These precautions will cut down metal finishing and simplify the cleaning operations as well. The same general rules that apply to bare steels should be observed in arc-welding or gas-welding coated steels. It is important that fume removal equipment be provided when welding heavily zinc-coated sheets.

When the fabricated product or part reaches the cleaning room and the above procedures are followed, the simplest cleaning probably represents the best cleaning. A solvent wipe with clean solvent and rags should be enough for low volume work. Vapor degreasing is effective for petroleum lubricants. Emulsion sprays in washing machines are completely satisfactory. Many cleaner manufacturers make excellent emulsion or detergent materials. It is sometimes advisable to apply a 0.25 per cent chromic acid rinse just before painting. This ensures adequate sealing of a surface disturbed by drawing or forming and neutralizes any contaminants that may be present on the surface or in the water.

★ ★ ★

ABRASIVE BELT MACHINING. A catalog describing the application methods of abrasive belt machining may be obtained by writing on company letterhead to the **Engelberg-Huller Co.**, 831 W. Fayette, Syracuse 4, N. Y. Five types of abrasive belt machining are described, pointing out the advantages of each.

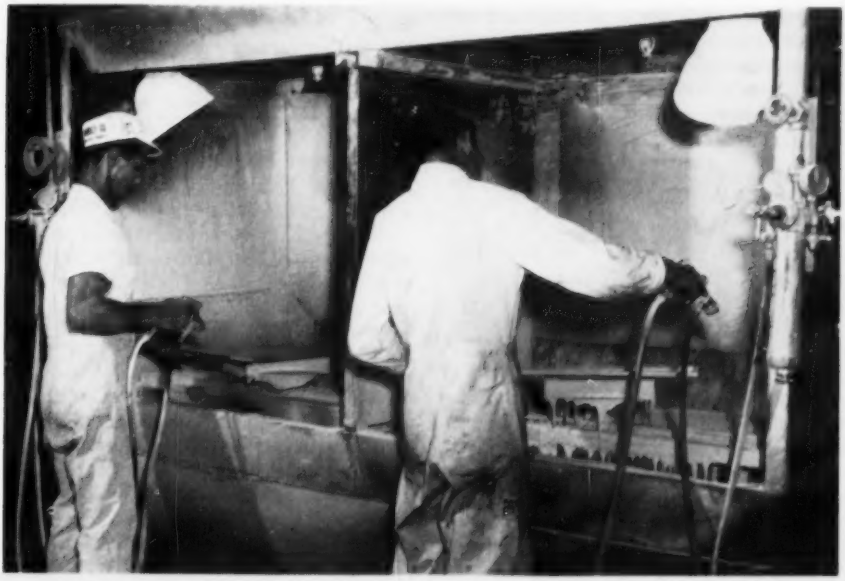
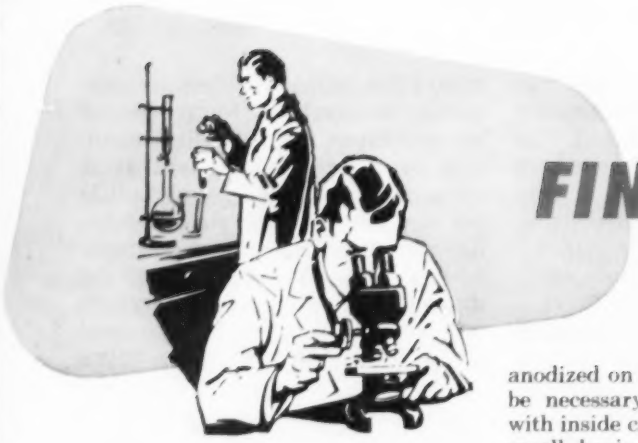


Fig. 6—Painting miscellaneous parts of phosphate treated zinc coated sheet steel with conventional spray painting equipment. (Photo courtesy Miami Cabinet Div., Philip Carey Co.)



FINISHING

Question: *What would you recommend as the best method of racking quantities of the aluminum tube described below for anodizing: 2 inch square tube; ⅛ inch wall thickness; 21 foot length.*

Consideration in order of importance would be: speed and ease of handling; maintenance required; initial cost.

R. J. C.

Answer: The problem posed is a substantial one. It would appear that the tubing would have to be suspended in a horizontal position in an anodizing tank, with the tubing in the center of the tank and two rows of cathodes, one on each side of the tubing. To make removal of the tubing from the solution simpler, the tubing should be racked at a slight angle to the horizontal so that the solution would leave the tube interiors readily.

Since electrical contact would normally be made only at the two ends of each tube, the racks (normally constructed of aluminum), would have to be mechanically quite strong. It is possible that you should consider the use of titanium as a contact material rather than aluminum in order to gain increased strength and durability.

If it is necessary that the tubing be anodized on the interior, then it would be necessary to design special racks with inside cathodes. Although I do not recall having seen such long articles anodized, presumably the current flow through the metal would be sufficient to secure an oxide coating near the center portion of each tube.

Since the problem you present is one involving many questions of equipment design, we are referring you to a number of equipment manufacturers for comments and suggestions.

——— *fc* ———

Question: *In the "Finishing Clinic" section of your May 1955 issue, you wrote on white satin chrome finishing.*

We are very much interested in obtaining any information in regard to this type of finish that is available. Can you either supply this material, or direct us to the proper source?

J. A. U.

Answer: Thank you for your letter commenting on the item regarding a white satin chromium finish mentioned in the "Finishing Clinic" section of the May 1955 issue of PRODUCTS FINISHING.

As mentioned in the "Finishing Clinic" reference, there are two methods of producing a white satin chromium finish. One method involves nickel plating in the usual manner followed by treatment with a fine wet abrasive blast and a final chromium plating.

CLINIC

The other method involves the deposition of a white chromium plate which has a soft matte appearance.

For further information regarding a satin chromium finish, we are referring you to suppliers.

———— *fc* ————

Question: *We have a small plating department in our plant where we cadmium plate some of our chains and sprockets. We have a cleaning problem because we cannot clean any heat treated parts with acid because of hydrogen embrittlement.*

Our cleaning consists of shot peening (to remove any heat treat scale), degreasing, and rattling in a cyanide solution and sand.

Although we use no acid in the cleaning of our parts prior to cadmium plating, we occasionally find parts that are brittle after our plating operation. This brittleness we assume is due to hydrogen embrittlement.

There are several questions we would like to have answered in regard to hydrogen embrittlement:

1. Will the use of an inhibited acid for cleaning heat treated parts prior to plating cause hydrogen embrittlement?

2. What causes hydrogen embrittlement in cadmium plating when no acid is used to clean the parts?

3. Can hot soak alkaline cleaning or reverse current cleaning cause hydrogen embrittlement?

Any other information you may have on hydrogen embrittlement and how to eliminate it will be greatly appreciated.

D. M. M.

Answer: You are quite correct in believing that brittleness of parts in metal plating is due to hydrogen deposited with the cadmium during the plating operation.

In answer to your specific questions: (1) The use of an inhibited acid prior to plating will make hydrogen embrittlement less likely but may not eliminate or prevent it altogether. (2) In cadmium plating, as in most other plating processes, hydrogen gas, having the same electric charge as a metal, is deposited along with the cadmium and creates the condition known as hydrogen embrittlement. (3) A hot soak alkaline or reverse alkaline cleaning usually has no effect whatsoever in causing hydrogen embrittlement.

No doubt, it is your practice to bake plated parts to remove or reduce hydrogen embrittlement. Such baking usually consists of one half to two hours at 300 to 500 deg. F., depending upon the amount of hydrogen in the electroplate, the size and weight of the parts and other factors such as the original metallurgical composition.

To eliminate the possibility of any hydrogen embrittlement from acid pickling, we suggest that you investigate products which are called alkaline descalers or derusters.

———— *fc* ————

Question: *At the present time we are barrel plating and burnishing small steel stampings in brass or nickel. We wish to go into the anodizing of small aluminum stampings and as we are not*

familiar with the process, we would like to get all the available information we can. Especially, we would like to know if this process could be done with the barrel method such as we use with the brass plate.

Also, we are enclosing in the attached mailing bag, a sample steel brass plated and lacquered part. You will note the black spots; they appear a week or two after the parts have been plated and lacquered. It happens only occasionally, but up to the present time we are not able to find the cause.

Perhaps you may know the cause and help us in this matter.

J. J. I.

Answer: We believe that anodizing by barrel process is difficult, if not impossible. However, for other opinions on this matter, we are referring you to several sources of information.

Your problem of the black spots on brass plated and lacquered parts is a familiar one. One source of trouble may be impurities in the brass plating solution. A thorough analysis of the solution followed by purification is recommended.

Sometimes it is necessary to use successive hot and cold rinses following plating to rinse the brass plated parts thoroughly and prevent the so-called "cyanide spots" from appearing.

As you probably are aware, some lacquers or synthetic finishes provide better protection against the black spots than others. Manufacturers of these finishes have given particular attention to this problem and can assist you in specifying a finish which will be best for your purpose. It goes without saying that the finish must be sprayed or dipped under the best conditions of temperature and humidity to secure the best possible final finish.

Question: *We are copper plating steel panels which are then given a polysulfide treatment and buffed. Our procedure includes alkali cleaning, cold water rinse, muriatic acid dip, cold water rinse, cyanide dip, cold water rinse, copper plate for 20 minutes, double cold water rinse, polysulfide dip, double cold water rinse, and hot water rinse. The copper plate, before it is blackened, has a dull color rather than the characteristic bright copper color.*

We would appreciate information and suggestions as to proper plating conditions which will produce a bright copper plate.

F. B.

Answer: In the book, "Principles of Electroplating and Electroforming," by Blum and Hogaboom, the formulas for a number of cyanide copper baths are given. One is as follows:

Sodium cyanide	4½ oz./gal.
Copper cyanide	3 "
Free sodium cyanide	1 "
Soda ash	2 "
Sodium thiosulfate (hypo)	¼ "
Temperature	104 deg. F.
Current density	5 amp./sq. ft.

The formula for the Rochelle salt copper solution is as follows:

Copper cyanide	3½ oz./gal.
Sodium cyanide	4.6 "
Free sodium cyanide	0.75 "
Soda ash	4 "
Rochelle salt	6 "
Temperature	158 deg. F.
Current density	60 amp./sq. ft.

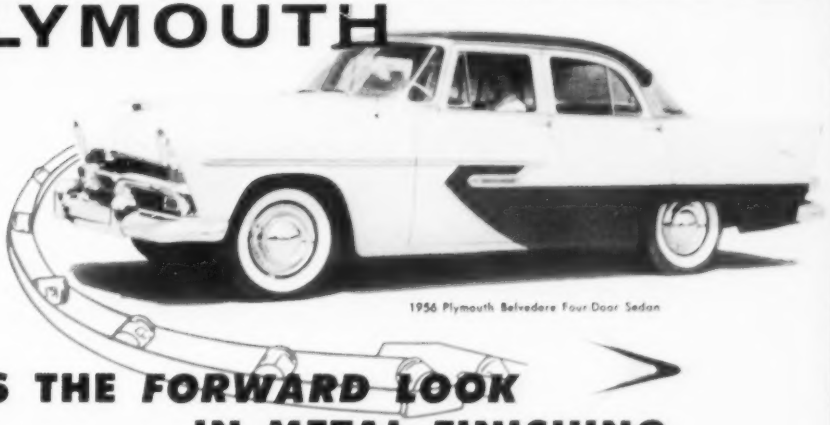
Generally, when a cyanide copper solution produces a plate with the color which you describe, the solution requires additional sodium cyanide or increase in the operating temperature, or in some cases, both.

For further information about copper plating, we are referring you to a number of suppliers of copper plating solutions.

STEVENS *Slants* ON METAL FINISHING

"FROM THE CASTING OR STAMPING TO THE FINAL FINISH"

PLYMOUTH



1956 Plymouth Belvedere Four-Door Sedan

PUTS THE *FORWARD LOOK* IN METAL FINISHING

In the Plymouth Division's all new multi-million-dollar V-8 engine plant, where new concepts of quality control and manufacture have been incorporated, a Frederic B. Stevens, Inc., automatic "Little Steve" machine has been installed for tin immersion plating of pistons.

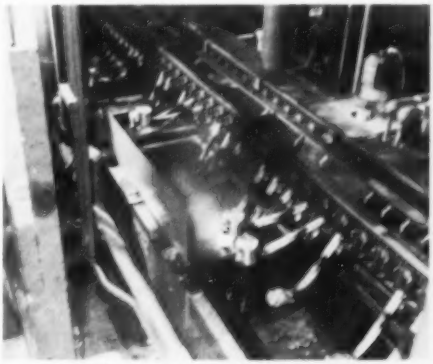
Plymouth's "Little Steve" is also equipped with automatic load and unload devices and can easily handle the production requirements of 1,600 pistons per hour. In fact, the Plymouth machine has been designed so that additional arms can be added at any time to increase the production rate.

"Little Steve" Pays Off

"Little Steve" is a recent development of Frederic B. Stevens, Inc. It is a space-saving, low-cost automatic plating and/or immersion processing machine using arms (as shown in the Plymouth installation) or racks which are placed on the arms. When racks of small parts are used it is capable of processing or plating up to 40,000 pieces per eight hour day.

The size of the "Little Steve" makes for easy installation in most plants. It offers no floor overload or ceiling height problems. Furthermore, it fits in most factory bays between structural members. Small over-all size and smaller tank size means low solution expense. The capital investment is low, too – low enough to enable many companies to now have their own automatic installation.

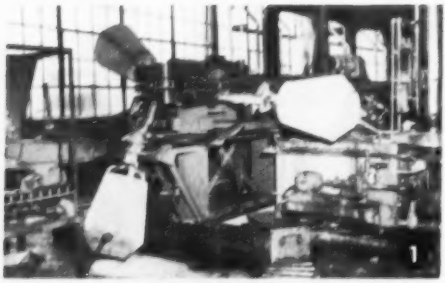
If you would like further information about "Little Steve" write today to Frederic B. Stevens, Inc., Detroit 16, Michigan, or call your local Stevens Sales Engineer.



"Little Steve" automatic machine for immersion tin plating at the new Plymouth V-8 engine plant

STEVENS *Slants* ON METAL FINISHING

STEVENS CONTRIBUTES TO THE *"FORWARD LOOK"* EXPANSION PROGRAM AT CHRYSLER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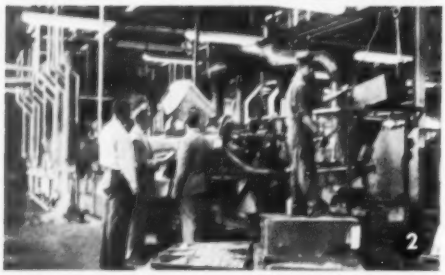
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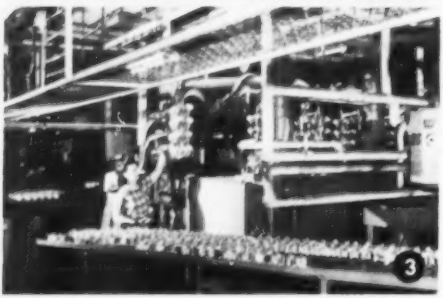
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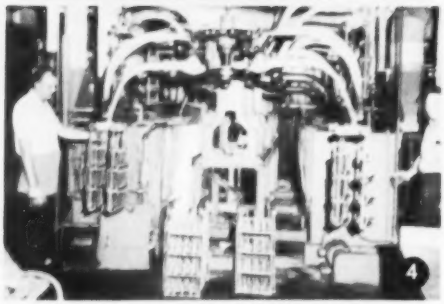
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In the modernized and new Chrysler Corporation plants in and around Detroit, Michigan, many Stevens automatic metal finishing machines and still tank lines are helping to maintain Chrysler's stepped-up production along with even higher standards of quality.

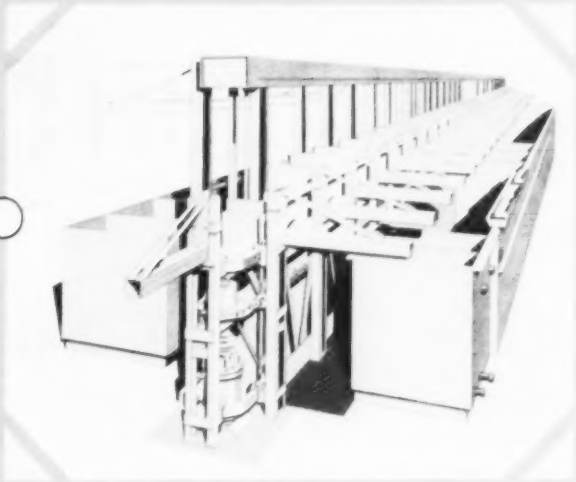
These Stevens installations are used for a variety of purposes. At the Chrysler Highland Park, Michigan, plant a Stevens Super "E" Automatic Barrel machine (illustration No. 1) is used for phosphating of small engine and chassis parts. At the Chrysler Jefferson plant in Detroit a Stevens Model "C" Automatic Barrel Plating machine (illustration No. 2) is used for zinc plating. The big Dodge Main plant has in operation a Stevens Model "B" machine (illustration No. 3) for tin coating of Dodge pistons, while still another Model "B" Automatic is in use at Dodge Main (illustration No. 4) for the rustproofing of engine and drive parts.

Chrysler Corporation also has installed Stevens metal finishing and processing equipment in the Evansville, Indiana, factory, in the big plant at Windsor, Ontario, and at the Tank Arsenal. There are numerous still tank installations at the various factory facilities, including one for specialized plating of jet engine parts at Warren, Michigan.

Your metal finishing requirements may call for numerous processes like Chrysler's or others such as nickel, chrome and copper plate, bright dipping, pickling or anodizing as well as polishing or buffing. Whatever your needs, Stevens has the complete line of equipment to meet those needs. We will recommend the right equipment for the job, and engineer and build the complete package. There is no need to shop around for special items of equipment.

STEVENS Slants ON METAL FINISHING

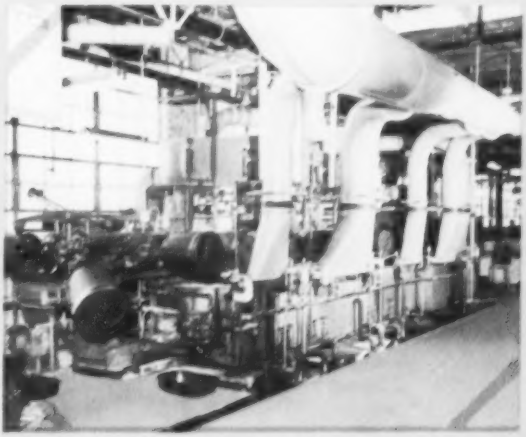
A page from the
STEVENS SCRAPBOOK
First complete family of Automatic Plating and Processing machines



Perspective drawing of a typical "Stevadoer" featuring adaptable load capacity, mechanical flexibility and high lift. It can be truly said that the "Stevadoer" meets tomorrow's combined safety and production requirements. Although on the market less than a year, nine different processes have already been adapted to this versatile unit. The most popular have been anodizing, paint preparation, rustproofing and copper-nickel-chrome, and zinc electroplating.

"Stevadoer" himself—symbol of the Stevens machine bearing his name. First advertised to the metal finishing industry in January 1955, it has become a phenomenal success. In less than one year over $2,000,000 in "Stevadoer" orders have been placed representing a total rack traveling distance of nearly one-half mile.

Stevens Automatic Barrel Processing Machine installation at Motorola, Inc., used for copper plating small parts. No lids, no covers, no clamps, that's the story behind every Stevens Automatic Barrel unit. In addition there is no operating mechanism submerged in any solution and no corrosion problems since the unit is easily ventilated. Furthermore no auxiliary dryer or transfer unit is required. Note: Complete dryer (either gas or steam heated) is installed as an integral part of the Stevens unit.



STEVENS *Slants* ON METAL FINISHING

TIPS AND TATTLE

The trend is definitely up in the use of aluminum in the 1956 model cars. And there is much more planned for 1957. Grilles, hub caps and instrument panel units are being anodized, then dyed. A colorful effect is the result. We're happy to say that Stevens automatic machines are being used for this work in the majority of the automobile plants. If you are interested in anodizing, plating, or buffing and polishing of aluminum we can help you. The Stevens staff has years of experience which is yours for the asking.

• • •

The trade press has featured several articles in recent months on subjects that are of interest to those in the metal finishing industry.

"In-Plant Plating Moves Diversified Product Line Faster!" – Stevens automatic barrel plating installation at Unistrut Corporation cuts down a 5 to 7 day minimum delivery time to a few hours – *The Iron Age*.

"You Can Cut Your Plating Costs!" with the proper waste disposal system – *Factory Management* and *Maintenance*.

"Bright Dip Line For Aluminum and Brass" – now even the small operator can profit from machine dipping – *Steel*.

Reprints of a few of these and other related articles are available to you from your Stevens Sales Engineer or home office.

• • •

Water pollution and shortages are increasing year after year and water conservation is becoming a national problem. Industry as well as the government is taking a hand in corrective measures. In rinse water alone shops and plants doing electroplating use millions of gallons per year. There are ways of using these rinse waters over and over with waste disposal and other systems. Stevens has been in the thick of this problem, as it applies to metal finishing, for several years. We will be glad to be of help to you.

• • •

One of the hottest tips we have been able to pass on for some time is the report of a large manufacturer of brass and bronze plumbing supplies. They have at least *doubled* the life of their polishing belts by using Stevens Belt Grease. In addition to this saving they have discovered that by cleaning their belts, at regular intervals, in a suitable solvent, the Stevens Belt Grease comes off and carries the metal particles with it. This operation removes the "glaze," restores the belt to its original condition, and the belt is ready for a second application of Belt Grease and continued use. This cleaning operation and lubrication extends total belt life approximately *four times*.

• • •

You may benefit from this experience we picked up not so long ago regarding degreasing units. In placing the degreasing unit in your plant be sure it is protected from strong cross-drafts. In a strong cross-draft, material will be wasted through excessive evaporation, and the vapors may drift to other sections of the plant.

THE FINISHING TOUCH

PRECISION FINISHING METHODS

by D. J. Swaninger
Sales Manager –
Stevens Compositions

Stevens experience and experimental work for customers with jobs calling for micro-inch surface specifications, edges with exact radii and surfaces prepared for minimum thickness limits, has shown that there is usually a method or product that does it better.

Sisal Buff Polishing – Where fast cutting action and blending of polishing lines is required on steel surfaces prior to plating, use a Sisal Buff along with Stevens #414 Steel Compound in bar form or Stevens #3-L

Liquid Compound. They provide the cutting action and prolong the life of the wheel.

Tampico Brushing – Maximum flexibility for difficult contours such as deburring precision gears and other operating parts. Longer life and faster cutting action is provided when used with Stevens Emery Paste and special Tampico compounds.

Cloth Buff Deburring and Polishing – Available in a wide variety of types, are used with Stevens greaseless compositions for the finest satin finishing operations, also for polishing and deburring critical edges and areas.

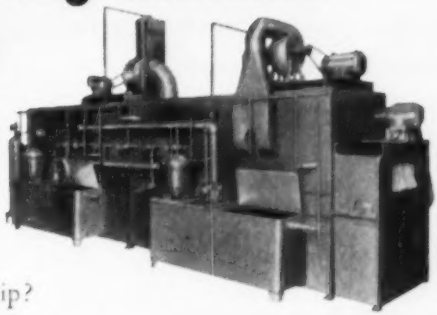
Cloth Buff Coloring – For coloring copper-plated surfaces having a thin deposit, where nickel-chrome is to be deposited directly on the copper – Stevens White Rose Lime Composition brings up a beautiful luster with minimum removal of plated metal. It flows the copper without cutting through.

We are always at your service in solving polishing and buffing problems. Write today.

FREDERIC B.
STEVENS
INCORPORATED
YOUR METAL FINISHING SUPERMARKET
DETROIT 16, MICHIGAN

Why Invest in an A-F Cleaning or Processing Machine

NOW?



YOUR costs up . . . competition tougher . . . profits beginning to slip?

Why invest capital funds now in cleaning and processing equipment? Why not wait for a change?

The answer is, "Nothing is so constant as change." You can wait *too* long, you know . . . obsolete equipment may allow your competition to make greater and greater inroads.

OR—you can insure "quality control" and lower costs *now*—with modern A-F Cleaning and Finishing Machines—so that you can compete in today's tougher conditions.

INVESTIGATE! Before you order any cleaning or processing machine—write us. If a "standard" A-F Machine will not do the job, A-F Engineers are specialists in custom-built equipment . . . since 1901.

Every A-F Machine is actually job engineered to lower your costs.

For newest brochure—showing how to select the right machine for the job you have in mind—write today.

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YOUR METAL FINISHING SUPERMARKET

A Strip Coating Line For

Roller coating unit applies paint to both sides of coil stock simultaneously.

By **ROLAND HARRISON**
President, KoolVent Metal Awning
Company of Pittsburgh

ROLLER COATING of heavier weights of coil stock is one of the newest factors in industry's efforts to increase productivity and reduce costs. The application of the idea of roll forming shapes after painting is becoming more and more widespread throughout American industry. The economies possible are such that direct material costs can be lessened and production rates increased considerably.

One of the most interesting applications of roller coating on coil stock is in the metal awning industry. One of these is at the KoolVent Metal Awning Company plant, Glenshaw, Pennsylvania. This installation is typical of the type of strip coating line which is presently being used. Strip coating lends itself well to elongated, formed parts like awning slats (Figs. 1, 2), aluminum siding, moldings, and so on. How-

Fig. 1 — This Pittsburgh, Pa., installation of KoolVent aluminum awnings demonstrates the use of just two color bands in each awning for color contrast. (Photo courtesy KoolVent Metal Awning Company of Pittsburgh)

High Production Painting of Coil Stock

ever, the possibilities for the stamping and drawing of strip coated stock are quite extensive (Fig. 3). Stamping or drawing dies usually must be hard chromium plated to avoid galling of the finish, just as roll forming dies are.

Finishing Installation and Processes

The KoolVent finishing system is a complete line (Fig. 4) installed by Gasway Corporation of Chicago, and includes washing, rinse stages, Alodizing*, coating and baking. It is set up to handle coils of steel or aluminum interchangeably and in widths from 2½ to 16 inches. KoolVent produces for its own manufacturing requirements and functions also as a supplier of coated coil stock to other users. The total production for 1955 has been estimated to be in excess of 3 million pounds of coated metal. The line produces an average of about 8500 pounds of coated aluminum per 8-hour day, running at a speed of about 75 feet per minute. Film thickness applied (dry) runs from 0.1 mil to 1.0 mil. Stock thicknesses handled are 0.007 to 0.051 inch. On a 7-inch strip of 0.025 thickness, KoolVent operates on a coverage figure of 850 square

*Registered Trade Mark, American Chemical Paint Co., Ambler, Pa.

Fig. 2 — The use of alternate color bands in awnings to provide additional decoration for solid-color homes is illustrated in this Youngstown, Ohio, KoolVent aluminum awning installation. (Photo courtesy KoolVent.)

"—aluminum strip stock passes through these spray washing machines at 75 feet per minute."

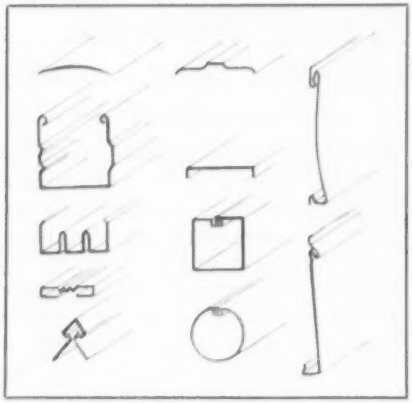


Fig. 3—Sketch of a representative group of cross sections of shapes now being roll formed after rollercoat painting. (Photograph courtesy Gasway Corporation, Chicago 26, Illinois.)

feet per gallon, coating both sides of the strip. This is based on a paint consumption figure of 50 gallons per 8-hour shift.

KoolVent's line is roughly similar to most installations of its kind, except that, because of space requirements, the line was designed with a 180-degree turn (Fig. 4). That is, it doubles back on itself, the unwind and rewind ends being located at the same end of the building.

Two unwind coils are located at the head of the machine. Coil stock is loaded onto the empty reel while the other full reel is feeding stock into the line. When the end of one coil is reached, the tail end is stitched to the fresh end of the new coil on the other reel. The reels are mounted on a horizontally pivoting axis which swings one reel into place at the head of the line and simultaneously swings the other to the side, or loading position.

Just beyond the unwind reels is a device called an accumulator, which stores reserve strip to be used when the splicing operation between coils is being accomplished. The accumulator consists of four steel rolls mounted about 15 feet above the floor, and three similar rolls mounted on an elevator at floor level. The strip is laced up and down over these rolls, providing about 90 feet of accumulated strip ahead of the Alodizing tanks. Between the accumulator and unwind reels, there is located a stitching machine which splices the strip.

The job of splicing two strip ends together is accomplished by applying a brake to the strip at the point where it enters the accumulator. This causes the accumulator roller to rise as the reserve strip continues to supply the coating line (stoppage of the line while splicing would upset the time cycles in the line). While the strip is braked, the end of the old coil is stitched to the beginning of the new coil. When this is done, the brake is released and the accumulator rolls gradually descend, making up the reserve supply of strip.

From the accumulator the strip travels through a series of cleaning and rinsing operations, preparing it for the next stage, an Alodizing treatment prior to coating. Alodine, a product of the American Chemical Paint Company, Ambler, Pa.,

changes the surface of the strip aluminum into a non-metallic insulating amorphous phosphate coating possessing excellent paint bonding properties. This coating at the paint-metal interface anchors the decorative finish securely to the aluminum.

Alodine possesses another property important in any good chemical conversion coating: electrical insulation. This property prevents undermining of the paint film at a scratch or other break in the film. It confines corrosion to the places where a section of bare metal is exposed by accident.

As can be noted in Fig. 5, the cleaning and alodizing process is carried out in narrow, closed spray washers, each containing the proper solution to fulfill its function in the 5-stage cycle.

As the aluminum strip stock passes through these spray washing machines at 75 feet per minute, the various processing solutions, controlled both as to chemical composition and temperature, are sprayed on the metal to effect the desired chemical change in the metal surface. The process stages are:

1. Alkali-solvent cleaning.
2. Fresh water rinse.
3. Alodizing with Alodine.
4. Fresh water rinse.
5. Acidulated water rinse.

The strip passes through a cooling and drying stage, going through a series of rolls accomplishing a U turn. This sends the strip back in the opposite direction (see Fig. 4).

The first operation after the turn is the actual rollercoating which applies the paint film in an even, predetermined thickness on each side of the strip. The coater (Fig. 6) is made up of a series of rollers which thread the strip through the coater

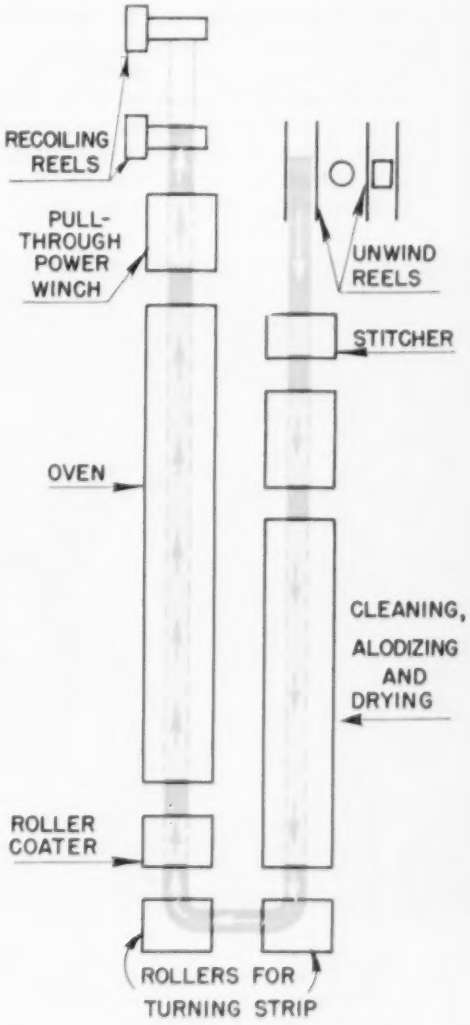


Fig. 4—Diagram showing floor plan of production setup for continuous cleaning, rollercoat painting, and baking of metal strip stock.

"Demand for its job coating production has grown rapidly—."

and transfer the paint to the strip. The paint is applied to the strip by what Gasway Corporation refers to as its reverse coating method. The baking enamel is flowed on the metal strip. This eliminates any tendency toward flow-out marks in the finish. Eliminated are variations in film thickness due to lack of uniformity in commercial metal strip. A bead of paint is formed at the point where the strip contacts the applicator roller. This paint is drawn out along the strip as it goes forward, during the 5-second interval between the coater and the bake oven.

The 650 deg. F. bake oven allows about 1½ minutes baking time for

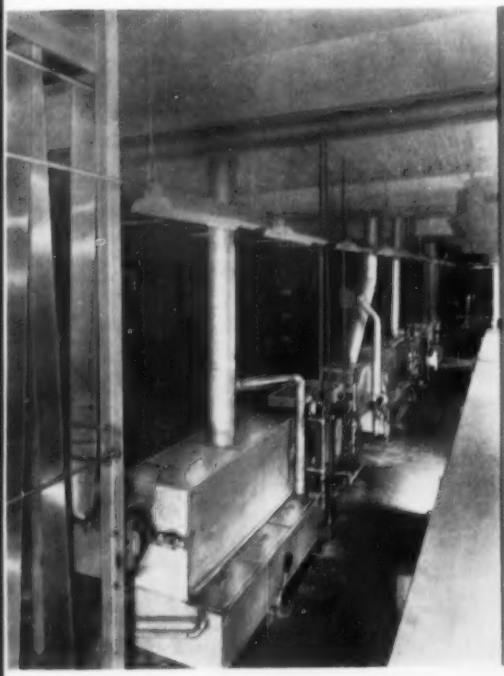


Fig. 5—A view of the cleaning and Alodizing section of the installation, which can produce from 8000 to 10,000 pounds of painted aluminum strip per day. When steel strip is being painted the total weight produced in any one day is greater. (Photograph courtesy the Gasway Corporation, Chicago 26, Illinois.)

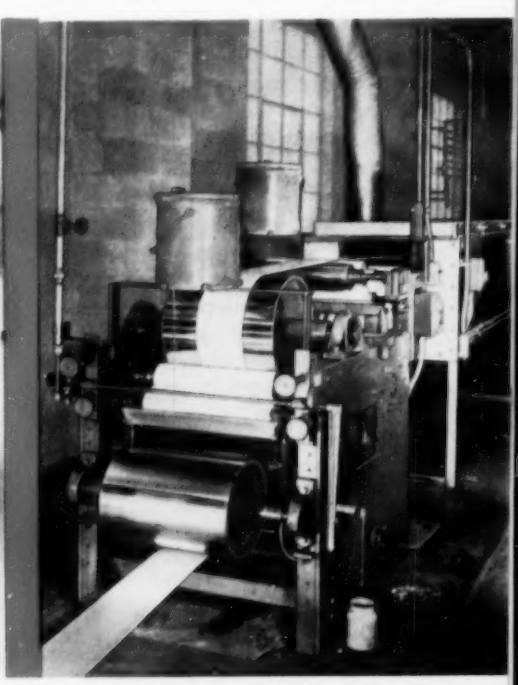


Fig. 6—The roller coating machine at Kool-Vent Metal Awning Company of Pittsburgh is designed to apply baking enamel to both sides of the metal strip at one time. Paint film thicknesses of 0.01 to 1.0 mil (dry) are being applied. (Photograph courtesy the Gasway Corporation, Chicago 26, Illinois.)

the enamel. The strip is suspended in the oven under tension, making no physical contact with any part of the oven. It is this principle which allows the line to coat and bake both sides simultaneously. After passing through the bake oven, the strip passes over a water-cooled cooling roller and pull-through unit (Fig. 7) which provides the power for the line. At this point are located two power-driven rewind reels (Fig 7) which recoil the strip. One reel is used until a full coil is built up. Then the strip is cut and the loose end is attached to the other rewind reel which then forms a new coil.

KoolVent's experience with its coating line has been quite gratifying to the company. Demand for its job coating production has grown rapidly enough to keep the production going steadily around the clock five days per week. The picture is so bright, in fact, that the company is considering expansion of its coating facilities.

* * *

Fiftieth Anniversary of Monel

THIS YEAR is the fiftieth anniversary of Monel high-nickel copper alloys. First produced in 1905, the combination of versatile properties of these alloys not only gave them acceptance in multitudinous applications throughout the world, but also inspired and promoted metallurgical progress. The Monel nickel-copper alloys are known for their resistance to corrosion, high strength and pleasing appearance, and applications are found in practically every industry.

Containing about two-thirds nickel and one-third copper, the first

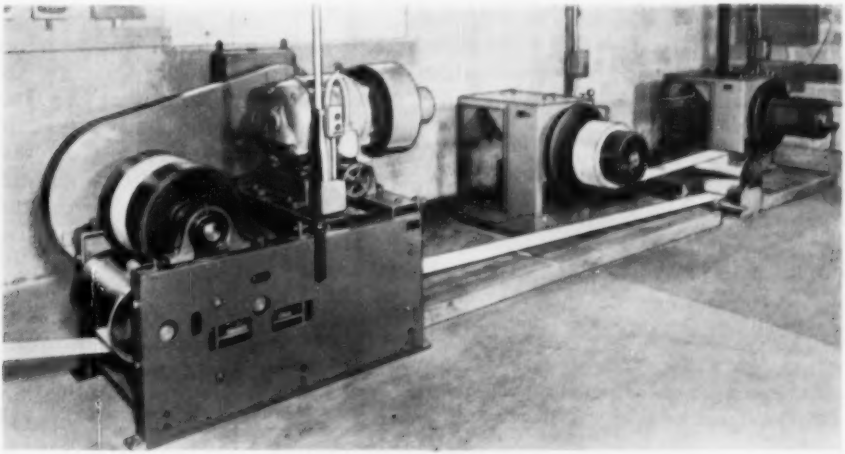


Fig. 7—Rewinding wheels at the KoolVent plant recoil the strip after it is painted on both sides. In the foreground is shown the pull-through which powers the line. Power driven rewind reels are on right. (Photograph courtesy Gasway Corp., Chicago 26, Illinois).

THIS SERVICE WAS DESIGNED FOR YOU

A lot of profits can roll out the back door of your plating shop if you fail to keep up-to-date on prices of the hundreds of items you use every day. That is why Udylite, as another of its many free services to electroplaters, publishes the Price Guide—a monthly price listing of important items regularly used by the trade, as well as information about new developments in equipment and processes.

It pays to buy supplies from Udylite—you can be sure of top quality, accurate weight and pricing—that Udylite stands back of every sale. You can be sure of prompt delivery too, as Udylite has widespread warehousing service.

The Udylite Price Guide has become an important tool for thousands of electroplaters. If you are not receiving your copy now, send us your name and address and it will soon reach your desk on the first of each month.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

Monel alloy was produced as a natural alloy from the ore of International Nickel's Creighton Mine in the Sudbury District of Ontario.

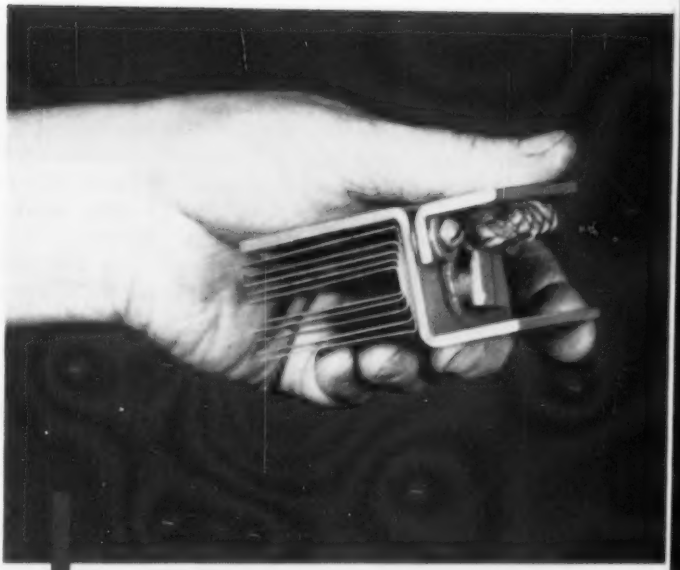
It owes its origin to the late Robert C. Stanley, a former chairman and president of International Nickel, and the trade mark "Monel" applied to it was adopted from the name of the late Ambrose Monell, the patentee of the original method of manufacture, who at the time of its discovery and early development was president of the company. Initially found to be resistant to the corrosive action of sea air and salt water, it was therefore useful for marine applications; it was later found to be resistant to the corrosive action of hot dilute sulfuric acid, making it suitable for use in pickling equipment in steel mills.

Numerous Applications for Monel

Since then numerous other applications for this first Monel alloy have been developed. It serves admirably in the chemical processing industries

because of its resistance to acids, caustics and other chemicals; in the medical and hospital fields it is used for the construction of durable, sanitary sterilization equipment; its strength and resistance to corrosion promote its widespread use in the petroleum and allied industries; in the power field it is used in tubing, valves and pumps; because of its excellent resistance to corrosion it is employed in the equipment for the manufacture of soaps and detergents; in the marine field it is in propeller shafts, fuel tanks and a host of other items; in the food processing and dairy industries, it is used extensively because of its resistance to the corrosive effects of brine, and in salt refining because of its resistance to corrosion and abrasion.

Monel has had a romantic as well as useful history. A Monel stove accompanied Admiral Peary to the North Pole, and a snow melting kettle, fabricated of Monel sheet, went with Admiral Byrd on an exploration trip. Monel



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Udylite Tests Reveal
Amazing Current Conversion Efficiency

This air cooled germanium cell with a rectifying surface the size of a dime will handle a 250 ampere load in a three phase circuit continuously and three years of tests show no detectable power losses. Including heat-radiating fins, it takes up just 8 cubic inches of space and weighs only 12 ounces.

Udylite in cooperation with the General Electric Company, now proudly introduces its new group of germanium rectifiers. Years of research and testing have proven that no other metal known offers the high efficiency of germanium as a rectifier material.

In operations calling for medium to high voltages, such as barrel plating, anodizing or chrome plating the efficiency of germanium soon pays the cost since the efficiency of a 3-phase germanium cell is *98* to *99 percent*.

Even at high loading germanium has less than one-volt drop in the forward direction. As for reverse current, germanium is again particularly good, having a reverse-to-forward resistance ratio of 400,000 to 1. Furthermore, Udylite germanium rectifiers require little maintenance and can be located in areas of minimum ventilation.

For further information regarding germanium rectifiers—prices, deliveries and specifications—consult your Udylite representative or write today direct to:

THE **Udylite** CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

seats and stems are in the 32-foot valves that control the water flow at Hoover (Boulder) Dam on the Colorado River, and in the transmission supports at the Panama Canal. Installed forty-four years ago, the Monel roof on the Pennsylvania Railroad Station in New York City shows little sign of corrosion.

The Monel nickel-copper alloy was the pioneer which led to the development of many of the other Monel alloys and nickel alloys now being produced by International Nickel.

As the forerunner of many other nickel alloys now being produced by International Nickel, the Monel alloys have played an important role in the development of today's "Alloy Age," contributing substantially to the progress of many fundamental industries of the modern world.

★ ★ ★

SCREEN PROCESS PRINTING. The Naz-Dar Company, 461 Milwaukee Ave., Chicago 10, Ill., has announced the availability of a catalog with 60 pages of information on screen process printing supplies and equipment.

The catalog is cross-indexed for easy reference to hundreds of items used in the production of quality silk screened printing. Inks, reducers, varnishes, squeegees, printing units, vacuum tubes, arc-lamps, silks, and cutting tools are illustrated with descriptive text.

RESISTS ACID, ALKALIES, SOLVENTS
RESISTS ABRASION, IMPACT
COSTS LESS THAN ACID-PROOF BRICK
4 TIMES STRONGER THAN CONCRETE

NEW CORROSION-PROOF SURFACING FOR FLOORS

COROCRETE

provides greater protection than conventional acid-proof floor materials . . . at considerable savings.

Recommended for use in chemical processing, food processing, plating and metal working industries, COROCRETE is quickly and easily applied over existing concrete surfaces . . . handles like cement topping.

Write today for trial sample of COROCRETE

6451-CC

THE CEILCOTE CO., *Inc.*

Corrosion-Proof Material and Construction

4848 Ridge Road • Cleveland 9, Ohio

For more data circle 132 on Reader Service Card

This "Famous Name" in "Fans" finishes 2500 lbs./hr. with NEW BURDETT "Radiant Heat" Multi-pass — Roof-mounted Finishing System

Mr. W. N. Thomsen, Supt
Signal Electric Division
King Seeley Corporation

— has this to say!

> The ovens are very quick to react to the various settings which we vary from time to time . . . most pleased with the degree of control we have been able to achieve with our Burdett Radiant Fired Ovens.

> I am sure that if your process requires a _____ oven that the Burdett Radiant Fired Oven will give you very good performance - trouble-free with a minimum of maintenance costs and adjustment.

We are proud of such direct, specific words and particularly so when written unsolicited in reply to an inquiry from another "Famous Name" prospect about Burdett equipment. Thank you Mr. Thomsen!

This System —
- Bakes — 12 minutes at 325°F
- Operates — at 11 FPM conveyor speed.
- Produces — hard, very high gloss finish at new low in cost

it consists of —
- One 3-stage power spray washer
- One Dry-off oven — 3 min. at 400°F
- Two 12' Water washer spray booths
- One #348 conveyor

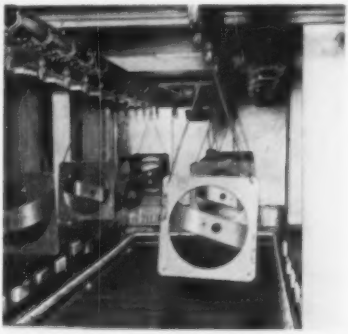
Every Burdett "Radiant Heat" Finishing System is engineered to specific production and product requirements — which with the proved advantages of "Radiant Heat" combine to give you a more durable finish, in less time, with interesting savings in production costs.

Whether you contemplate a new finishing department or a conversion of present equipment — or, merely a separate oven addition to your present equipment —

Be Sure it's Burdett — either "Radiant" or "Convection"

Write for the Burdett Story!

Side view of 3-stage washer showing one-stage pump and control panels for Bake Oven and Washer.



Interior of 2-pass Dry-Off Oven, Burdett No. 10L Radiant Line Burners shown on both sides.

Exterior view of Burdett Paint Baking Oven, showing location on plant roof. Saves valuable floor space.

BURDETT
MANUFACTURING COMPANY

3447 West Madison Street • Chicago 24, Illinois

Detroit Philadelphia New York Cleveland Dallas

Manufacturers of
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT SYSTEMS", OVENS, HEATERS, AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS

For more data circle 133 on Reader Service Card

Four years' exposure to salt air, hot sun

Childers All-

THE EXCELLENT durability and color holding properties of Pittsburgh's Gloss White Baking Enamel have contributed much to the nationwide popularity of Childers Awnings. The Childers Manufacturing Company of Houston, Texas, has specified this finish for its handsome, all-aluminum awnings since production of these began in 1951.

Not a single failure has marred the beauty of these precision-built, low-cost awnings. Even three and four years of exposure to the salt air, brilliant sunlight and the

PPG **PITTSBURGH**

PAINTS • GLASS • CHEMICALS • BRUSHES

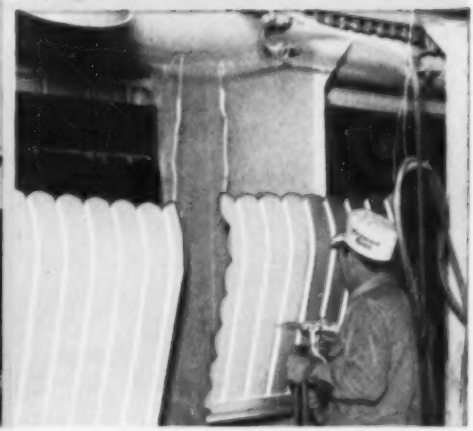
PITTSBURGH PLATE GLASS

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

and chemical fumes fails to dim luster of

Aluminum Awnings

Finished with Pittsburgh's Gloss White Baking Enamel



chemical fumes in some areas of the Gulf Coast couldn't stain or deface their gleaming whiteness.

Besides good color-holding throughout its life, this finish is remarkably tough and flexible. It resists marring during boxing, shipment and installation.

Another equally important reason for Childers' continuous use of Pittsburgh's Gloss White Baking Enamel is its simple and easy application by hot spraying. This permits speedier production with practically no rejects, appreciably reducing manufacturing costs.

PAINTS
PLASTICS • FIBER GLASS
COMPANY

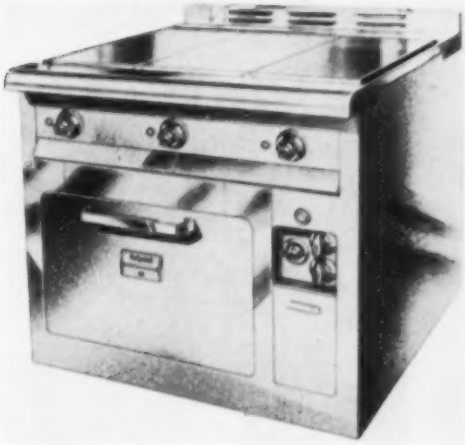
Pittsburgh Plate Glass Company
Industrial Paint Division,
1 Gateway Center, Pittsburgh, Pa.

For more data circle 134 on Reader Service Card

Finishes That Aid in Appearance and Utility

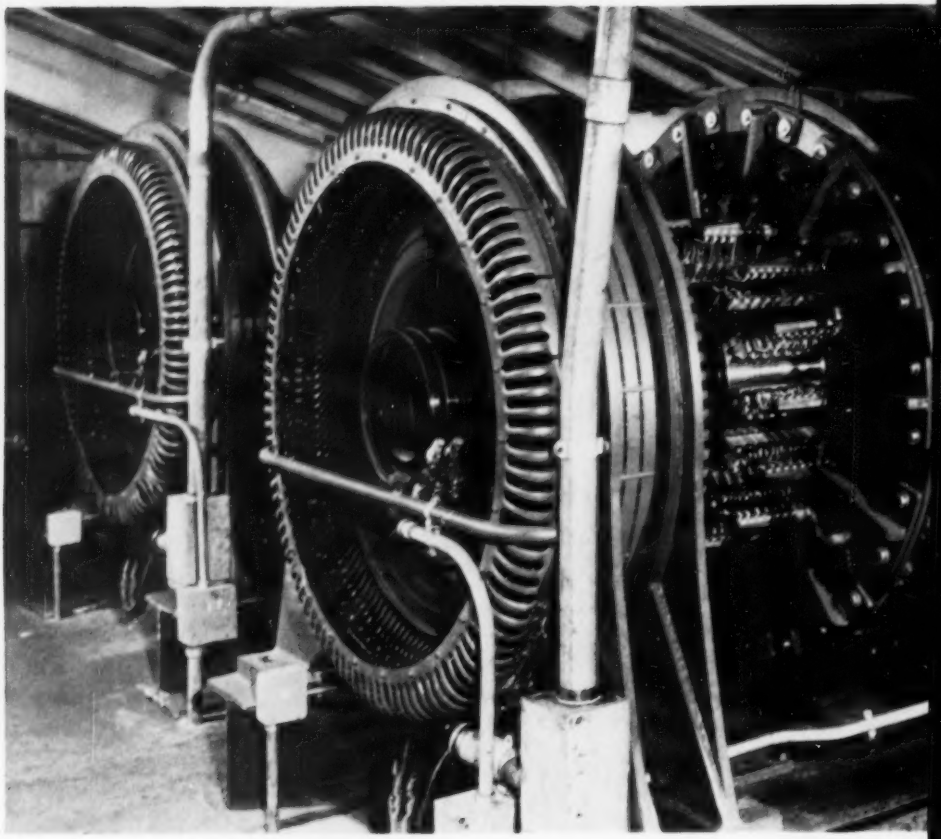
World's largest globe, designed and fabricated by the Bettinger Corp., Waltham, Mass. Measuring more than 29 feet in diameter, it is made of 584 pieces of porcelain enamel on steel, in more than 21 colors, which show the political and geographical divisions of the Earth. Globe is unusual for its size, and for the fact that it is the first time a piece of metal formed in a compound radius has been porcelain enameled. (Photo courtesy the Bettinger Corp., Waltham, Mass.)

Acid resistant porcelain enamel finish developed and applied by the Erie Enameling Co., Erie, Pa., is being used to finish these agitator blades, used for mixing corrosives. Since the blades have a smooth, glassy surface, they have also been found useful in mixing gummy, viscous materials. (Photo courtesy The Erie Enameling Company, Erie, Pennsylvania.)



Stove designed for heavy duty use in hotels and restaurants is spray painted with "Permalucent," a lustrous, silver gray aluminum heat resistant enamel, baked on in a hammer type pattern. (Photo courtesy Midland Industrial Finishes Company, Waukegan, Illinois.)

Kelvinator Foodarama features a refrigerator and freezer in one unit. Exterior finish is baked enamel, available in gleaming white or eight pastel colors. Interior is finished in chip and acid resistant porcelain enamel. Aluminum trays and racks are made attractive by anodizing and dyeing gold. (Photo Courtesy American Motors Corp., Detroit 32.)



YOU SAVE 4 WAYS WITH

Chandeysson GENERATORS

USE LESS POWER ... precision-built for efficiency and built-in voltage regulation.

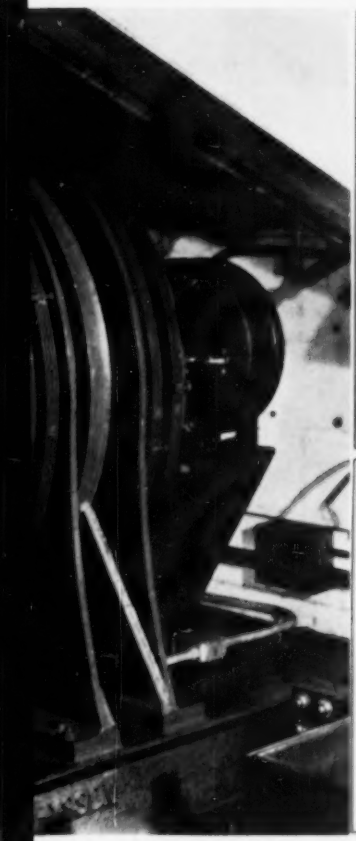
GET MORE OUT OF THE POWER YOU PAY FOR ... built-in high power factor at no extra cost.

BE SURE OF POWER WHEN YOU NEED IT MOST ... overload capacity as great as 50% momentarily and 25% sustained, without distress or damage.

ENJOY LIFETIME POWER DIVIDENDS ... sustained, lifetime overall constant efficiency as high as 85% does not decrease with age or overload.

CHANDEYSSON ELECTRIC COMPANY, 4082 Bingham Avenue, St. Louis 16, Mo.

For more data circle **135** on Reader Service Card



INDUSTRY LEADERS CHOOSE Chandeysson ELECTROLYTIC GENERATORS

Example:

At SUNBEAM CORP.'s Plant No. 2, CHICAGO,

these two 10,000 ampere, 9 volt, 40° Chandeysson Motor Generators provide ample, low-cost power for the plating and finishing of parts

HIGH-EFFICIENCY OPERATION IS ASSURED by the use of superior materials and craftsmanship. Chandeysson Generators have set the highest standards for performance, trouble-free operation and long life.

58

For complete information send coupon for bulletins D-101 and D-102

CHANDEYSSON ELECTRIC COMPANY
4082 Bingham Avenue, St. Louis 16, Mo.

Please send bulletins D-101 and D-102

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Educating
By

Electroplaters Mail

Fig. 1—The author (above) correcting a set of examination papers submitted by students.

By JOSEPH B. KUSHNER
Director, Electroplating School
Stroudsburg, Pennsylvania

OPERATING A PLATING CORRESPONDENCE SCHOOL can be quite frustrating, but it has its compensations too. There are many surprises in conducting electroplating training by mail and you make many friends. While the basic course is intended primarily for the practical man, I have been continually astonished by the large number of chemists, metallurgists, engineers and executives who enroll in "Electroplating Know How." One day an enrollment came in from Finland (the school has students on every continent and in every country where plating is done—except the iron curtain countries!) from a man who signed himself Roy Kyrklund. It was surprising to learn that Roy Kyrklund is one of Finland's leading metal finishing consultants. Even more astonishing and pleasing was a subsequent letter from him which said "I think you could make an expert plater out of a complete stranger to the trade. Even for a man like me, with considerable practical and theoretical background, your course has proven of great value." Letters like these contribute to the interest in educating electroplaters by mail.

Very often I have been asked, "How come you started to teach electroplating by mail?" The answer is simple. There is a definite need for such a course of training.

The need for such a course be-

came known to me more than ten years ago while I was doing consulting work that brought me into contact with many plating plants. I found that the average plater who had any interest in his work at all, was more than anxious to increase his knowledge of the work, and with it his value to his organization and his potential earning power.

However, he was handicapped in achieving his goal by the fact that sometimes his educational background was limited so that self study, without outside help, was difficult.

Certainly, on - the - job training courses given by a company chemist or engineer provide one answer to this problem. However, in many smaller companies there is no one qualified to give such courses. Accordingly, the only logical solution to the problem of upgrading the average practical plater, was a correspondence course.

A very special kind of correspondence course, I realized, would be required. It would be going to men with varying educational and experience backgrounds. This meant that while the course had to be easy to follow and understand, it had to be interesting enough to hold attention, and inspirational enough to arouse enthusiasm for further study. Above all, with its basic purpose that of teaching a man to "think" plating, it had to present the practical aspects of the subject in an integrated way with the "thinking" parts, else it would be worthless.

These ideas were mentally "kicked around" for a few years. In 1948 the course was announced to the in-

Fig. 2—Dora Kushner (left), registrar of the electroplating school, enters a student mark for the record while Sophie Blacker, secretary, corrects a student change of address.

dustry. To be perfectly honest about it, the announcement was met with something less than enthusiastic reception. True, there were a number of congratulatory letters from prominent people in the industry telling me this course would fill a definite need.

One objection to a course of this kind has been the feeling that platnig is a subject which can be learned only by "doing." However, a great deal of what we learn, we learn through reading.* If a man "reads" before he "does," he approaches the "doing" with more confidence and learns faster. It is our belief that this fact or principle of education has been a leading factor in the acceptance and success of the course.

In the seven years that have elapsed since its first shaky start, the school has established itself as a successful going enterprise. We worked on the theory that one student would tell another and that theory has paid off.* Apropos of this, about five years ago I enrolled the owner of a large job shop in the Chicago area. I did not know how old the man was. Two years later this same man enrolled his son, who was acting manager of the plant. A year ago the son enrolled another man with the same name. That's right—it was the grandson, just coming in the shop as a tank man.

One time an enrollment arrived accompanied by an urgent telegram: "Vital that you send the complete course at once!" While ordinarily the school sends the lessons out in a

*Lyle M. Spencer, President, Science Research Associates, "This Week" page 7, August 14 issue, 1955.

*The school has never employed a salesman or representative to solicit enrollments.

Fig. 3—The school's laboratory comes into use to provide special assistance on a student problem in plating bath control.

regular prescribed manner, in this case an exception was made. The reason for the urgency was soon made clear in a subsequent letter from the student which read in part: "Frankly, your course has been a life saver. I had purchased this plating business which was in a very run down condition, with the understanding that instruction from the previous owner was to be part of the deal. This turned out to be practically useless as he was ill informed as to proper plating procedure. Your course enabled me to straighten out many things that were wrong, and without doubt our work is about 200 per cent better than anything that was done here before. Now I know what is needed most and how to use it and care for it, thanks to your instruction."

The oldest student the school has had to date is Joseph "Pop" Maushard, owner of the Central Plating Works in Peoria. This young fellow enrolled at the tender age of 73. Obviously it's never too late to learn.

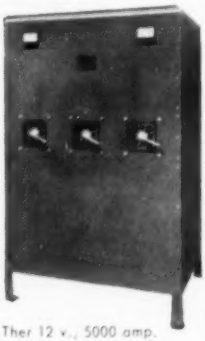
There are many satisfactions in training electroplaters by correspondence. The greatest of all come from the letters the school receives from students who are on the way up because of the training they

Whatever your D.C. requirement....

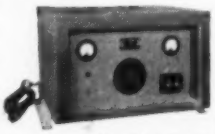
THERE IS A

THER PLATING RECTIFIER

Best suited to your particular operation.



Ther 12 v., 5000 amp. Self-Contained Rectifier.



Ther also manufactures Bench Model Rectifiers. All models are drip-proof in construction, convection cooled and complete with stepless variable voltage control. Sizes range from 25 to 250 amps. 6 v., 150 amps. unit shown.

Feature by feature, Ther Plating Rectifiers are job-rated to give you the most in D.C. power for your operation.

Conservatively rated premium quality selenium stacks deliver D.C. at peak efficiency to cut production time to a minimum and save on power costs.

Arc-eliminating voltage controls protect and lengthen service life of components and equipment.

Copper conductors and bus bars are used throughout to provide maximum conductance and resistance to corrosion.

Fully enclosed ball-bearing fan motors are incorporated in all units.

Vacuum cooling, proven in practice as the most effective means of producing uniform air distribution.

Models are available as either 5% or 18% ripple depending on which is most suited to your operation.

RESULT: HIGH EFFICIENCY, LONG LIFE AND TROUBLE-FREE OPERATION.

Ther Rectifiers for plating or anodizing are available in a complete line in sizes ranging from 6 to 50 v. at from 25 to 30,000 amps. with self-contained or remote controls; either manual or automatic.

Contact Ther for your specific needs in plating power. Request new Bulletin 5500, containing important data on rectifier arrangements and valuable installation hints.

THER ELECTRIC & MACHINE WORKS

ESTABLISHED 1915

13A South Jefferson Street • Chicago 6, Illinois

For more data circle 136 on Reader Service Card

CLINCO

PIONEERING QUALITY INDUSTRIAL FINISHES SINCE 1928

FLO-COATING...

- *SAVES PAINT*
  Less waste
- *SAVES LABOR*
  Man-hour savings
- *CLEANER FINISHING*
  Dirt can't get in tank
- *BETTER COVERAGE*
  More units per gallon

Dipping has been improved upon.

Volume production that is dipped can be done better and cheaper when Flo-Coating is adopted.

The benefits to be derived can be fully realized only when your supplier of enamel is thoroughly experienced in this field.

Your inquiries are invited.

Customer Service is Our No. 1 Concern

THE CLINTON COMPANY

1210 ELSTON AVE. • CHICAGO 22, ILL.

have received. We like to follow their progress. A typical success story is that of George Kersten who enrolled for training while a tank man, and is now superintendent of one of the largest plating plants in the Midwest. Just a few simple words from a man like that, "I can't begin to tell you how much your course has helped me," make the tedious pencil and paper work seem worthwhile.

In connection with the upgrading of plating personnel many progressive companies subsidize the training of their men in "Electroplating Know How," enrolling them in the course and eliminating on-the-job training in this subject. They do it because it helps improve their plating results and reduce waste.

The value of the course as a reference was brought to my attention by the visit of a supply house salesman, on his way through from Chicago. On one of his regular stops at the plant of a large metal furniture manufacturer he got into a discussion with the manager over the merit of a certain cleaning procedure. The argument waxed hot and finally the manager said, "O.K. we'll see who's right!" He went to the office safe, withdrew from it twelve battered and well-thumbed volumes of "Electroplating Know How," and said to the salesman, "If it's in here I'll take your word for it."

The course has been purchased as a library reference text by such institutions of higher learning as Notre Dame University and the

For Dust Free Finishes!
BOND TACK CLOTH

IN ROLLS
Cut off any size piece to use as needed.

IN BULK
Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME
Now Available in Rolls or Cut Bulk—White or Gold
In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.
No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!
The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.
TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

BOND CHEMICAL PRODUCTS CO.
"The Tacky Wiper Specialists"
2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

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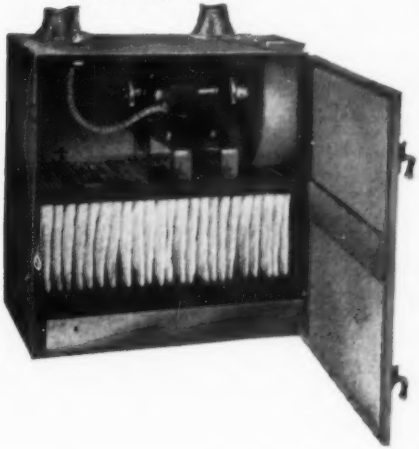
FOR THE FINISHING TOUCH

Hisey Buffing and Polishing Machines . . . the equipment you need to apply the finishing touch. The best finish on the polished product is largely dependent on the wheel operating at proper speed and without vibration. Operators know **Hisey** for these performance qualities. Too, operators like **Hisey** Buffing and Polishing Machines because they offer plenty of foot room and freedom of operation about the wheels. Production is fast and with minimum of effort.

All moving parts subject to wear are made with liberal reserve capacity and of materials scientifically selected. **Hisey** is a quality product and offers maximum production, low labor cost and minimum maintenance. Made in a wide range of types and sizes from ¼ H.P. bench mounted to 50 H.P. capacity.



HISEY DUST COLLECTOR

Bag type Dust Collector, made in three sizes. For use with all **Hisey** Buffing and Polishing machines. Cyclone type also available in three sizes.

Write for Catalog 72 PW today!

Hisey THE HISEY-WOLF MACHINE CO.
CINCINNATI 8, OHIO
Division of The Cincinnati Electrical Tool Co.

For more data circle 139 on Reader Service Card

Educating Electroplaters

Israeli Institute of Technology. It has been used by several government agencies for training purposes and a number of state vocational rehabilitation bureaus. Many members of the American Electroplaters Society are or have been students. Recently negotiations were completed for a Spanish version of "Electroplating Know How" which will be given by the Instituto Electroquimico of Barcelona. Negotiations for a Scandinavian version are still hanging fire.

"Electroplating Know How" is not a stagnant thing. It is continually being improved. Recently a comprehensive supplement has been added to it covering many of the new developments in the metal finishing field. In addition, new courses are being planned and added as the need arises. The latest one deals with the highly specialized subject of "Water and Waste Control for the Plating Shop." Another course being readied for publication is an advanced course dealing with industrial chromium plating.

Experience of the school for the past seven years has proved that there is a definite need for the course; that electroplating technology can be taught by mail; that the average practical plater can be upgraded by correspondence training.

YOUR DEALER
NAZ-DAR
800 SERIES
WEATHER-PROOF
SILK SCREEN ENAMEL
SILK SCREEN PROCESS COLORS
EXTENDS YOUR PRINTED AREA WITH UNIFORMLY HIGH OPACITY DURING AN ENTIRE RUN
TV SETS – NAME PLATES
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NAZ-DAR WEATHERPROOF SILK SCREEN ENAMEL
INKS • VARNISHES • LACQUERS • SILKS • SCREEN PLATES • SQUEEGEES • FILMS
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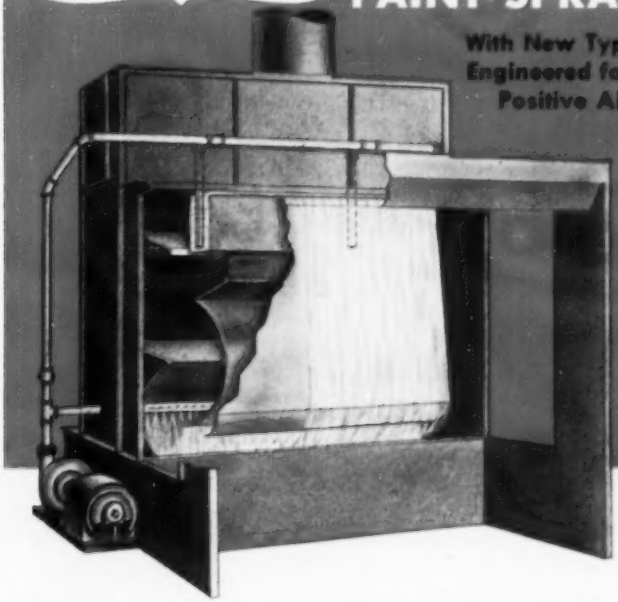
DESPATCH NEW WATER WASH PAINT SPRAY BOOTH

With New Type Baffle Chamber Engineered for 100% Efficiency Positive Air Cleaning Action



Entirely New! The new type baffle chamber provides a positive air cleaning action that prevents paint pigments, moisture and volatiles from reaching the exhaust stack or the outside of a building.

The new air scrubbing chamber features a specially-designed spray header mounted within two curved baffle plates. When water is pumped into the header it sprays forth in three directions from hundreds of orifices and strikes the baffle plates, building up a violent spray turbulence that removes practically every last particle of paint.

Lower Operating Cost by Actual Test!

NEW **Water curtain supply header** is located *outside* the plenum chamber for easy access. Vertical feeder lines do not interfere with tank adjustments.

NEW **Water Curtain Supply Tank** is completely adjustable. It provides a uniform, non-splashing flow of water that completely covers the curtain and prevents any paint accumulation.

NEW **Bleeder Line Keeps Header Clean** . . . keeps orifices from clogging. The new Bleeder line causes a continuous flow of water from the bottom of the header, preventing the settling of solids in the bottom of the pipe.

NEW **Fast-Action Removable Panels** permit easier maintenance. The entire interior of the booth is accessible in just 3 minutes, by removing just four fast-action clamps per section.

1. Will exhaust air containing not more than 5 grains of solid every 1000 cu. ft. of air handled.*
2. Will exhaust air containing not more than 50 parts per million solvent vapors.*
3. Will reduce down time for cleaning to a very minimum, thus increasing production.
4. Will prevent paint pigments, moisture and volatiles from reaching exhaust stack or outside of building.
5. Will thoroughly eliminate moisture from exhaust air, before it is exhausted.

*Based on spraying rate of approx. 3 gal. per hour per ft. length of booth.

Write for Bulletin No. 66

Dept. C

Minneapolis Office: 619 S.E. 9th St.
Chicago Office: 4554 N. Broadway
Sales and Service in All Principal Cities

DESPATCH OVEN COMPANY

For more data circle 141 on Reader Service Card

Spotlighting FINISHING Progress

Titanium

The element titanium has been known to chemists since 1790, and titanium metal was first prepared in a relatively pure form in 1910. Compounds of titanium have been in commercial use for many years, but the metal received very little attention until about 1948. A recent report on the present status and probable future of titanium metal was presented in "Chemical Week."

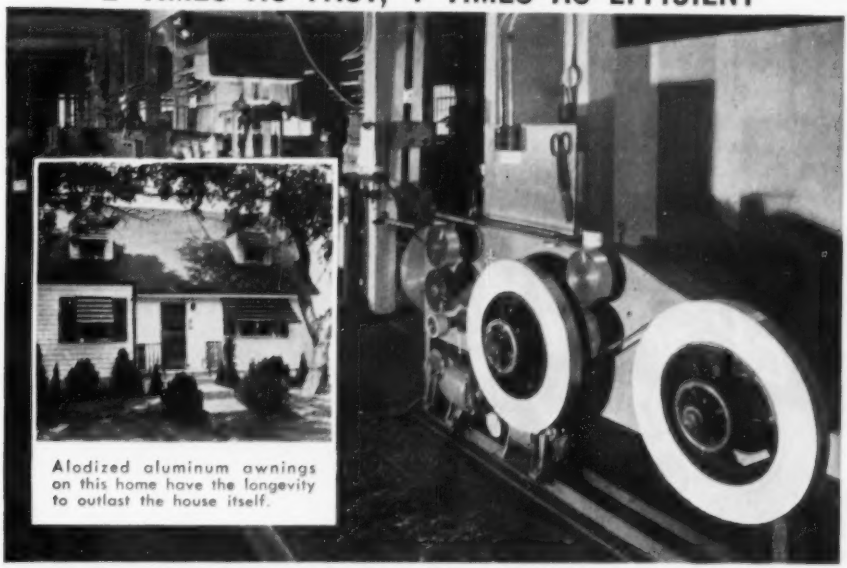
Titanium is the ninth most abundant element in the earth's crust. The only structural metals surpassing it in abundance are iron, aluminum and magnesium. More than fifty minerals contain titanium as an essential part of their chemical constitution, but only two of these are currently important. Rutile, TiO_2, is the major source for American production. It is imported from Australia and is also available in beach sands on the American continent. Ilmenite, $FeTiO_3$, occurs in very large deposits in Quebec and the Adirondack region of New York state as well as smaller deposits in several other states.

By Dr. C. Fred Gurnham,
Head, Dept. of Chemical Engineering,
Michigan State College

•

A Monthly Digest of Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry

ALUMINUM AWNING MANUFACTURER FINDS ALODIZING 2 TIMES AS FAST, 4 TIMES AS EFFICIENT



Alodized aluminum awnings on this home have the longevity to outlast the house itself.

The very first continuous strip Alodizing line was installed by Orchard Brothers, Inc., Rutherford, N.J. This view of its plant shows the Alodized aluminum strip leaving the machine and being wound on the reels in the foreground.

Previous process needed more time and finish was too brittle for roll-forming after painting

Before being told about Alodine,® Orchard Brothers, Inc., maker of Alumaroll* awnings, used a crystalline phosphate coating to prepare its aluminum strip for enameling. Not only was this a slow and inefficient process, with many hours of downtime, but it made the finish too brittle to roll-form after painting.

Alodizing with Alodine has had a two-fold production benefit: it has cut operating costs about two-thirds and has increased output 50%. And the Alodine coating forms such a durable and tenacious bond that roll-forming of the slats after the enamel has dried does not damage the finish.

Another tangible advantage of Alodizing with Alodine is the technical assistance provided by ACP. Our Engineering and Service Departments not only recommend the proper equipment, but instruct plant personnel in its operation, and check samples of the finished product in our own Quality Control Laboratory.

We can offer the same product advantages to you. Write for complete information about the process today.

*T.M. Orchard Brothers, Inc., Reg. U.S. Pat. Off.

Orchard Brothers, Inc., and American Chemical Paint Co. are Members of National Metal Awning Association

AMERICAN CHEMICAL PAINT COMPANY, Ambler 14, Pa.

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CHEMICALS ACP PROCESSES

For more data circle 142 on Reader Service Card

Titanium Recovery Processes

The chemistry of titanium metal production from either of the oxide ores looks simple. In practice, however, this reduction is extremely difficult to accomplish. One reason for the difficulty is the high melting point of approximately 3300 deg. F. A more important difficulty is the great affinity of hot titanium metal for oxygen, nitrogen, and almost everything else that it may contact. These impurities in the finished metal may totally destroy the desirable properties of titanium.

The present commercial process for producing titanium metal was developed by Kroll in 1937. It involves batch reduction of titanium tetrachloride by molten magnesium, yielding sponge titanium and magnesium chloride by-product. An inert atmosphere is essential for this reduction and for subsequent processing. Argon is commonly used, although helium has also been applied for this purpose. Details of the reduction operation are not generally available, being considered secret within each company.

The original process used in the laboratory to produce titanium in relatively pure form was reduction with sodium. One large plant now under construction will utilize

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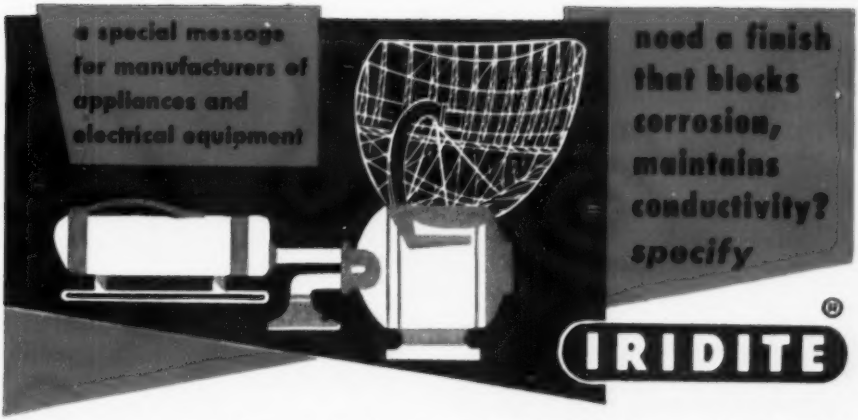
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this process. Sodium has an advantage over magnesium in its lower melting point (207.5 deg. F. instead of 1203.8), hence it can be pumped and metered in liquid form. The by-product sodium chloride is also preferred to magnesium chloride. There is, however, no economic advantage to the use of sodium, and the magnesium process has been used exclusively up to the present time and will be used in most proposed plants.

Another process that has been suggested for titanium reduction involves the use of sodium-mercury amalgam from chlorine manufacture. This process has been patented, but its commercial use is probably not even under consideration at the present time. Other techniques involve distillation of titanium chlorides in the presence of hydrogen, or their reduction with natural gas. A recent British process is based on passing titanium tetrachloride over titanium oxide ore. The tetrachloride is partially reduced to a lower valence and, in the process, picks up titanium from the ore as a volatile chloride. The mixture of gases, now enriched in titanium, is withdrawn from the ore and heated. This causes regeneration of titanium tetrachloride and deposits titanium as metallic beads. Much development work remains to be done on this process before it can be utilized.

Many electrolytic processes for the reduction of titanium have been

To page 66→

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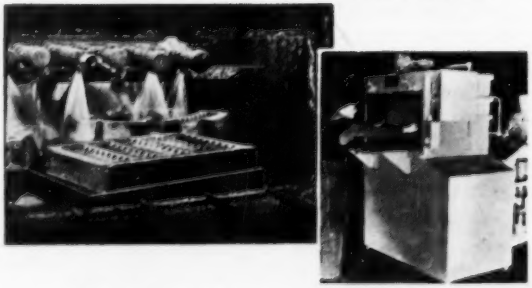

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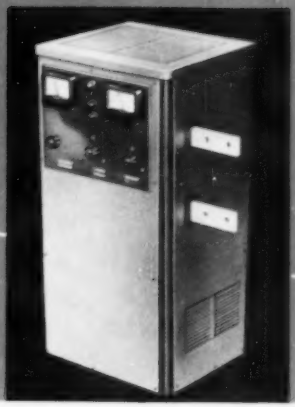

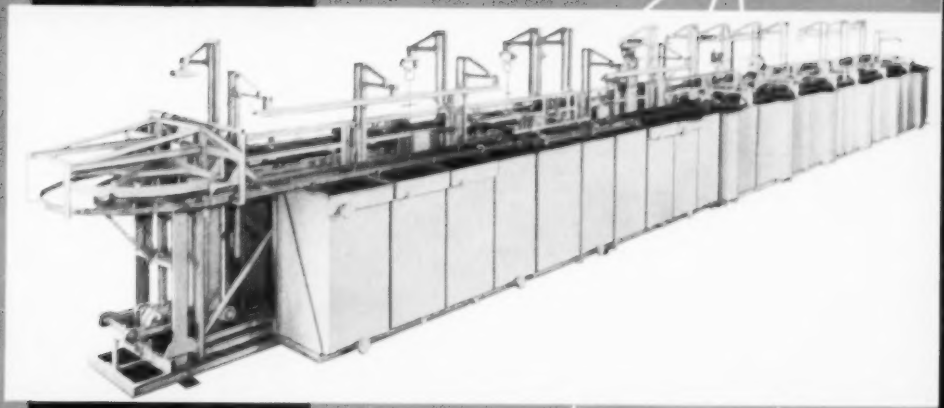

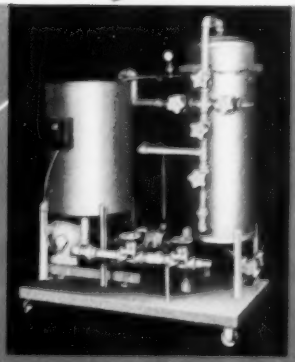

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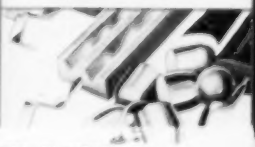

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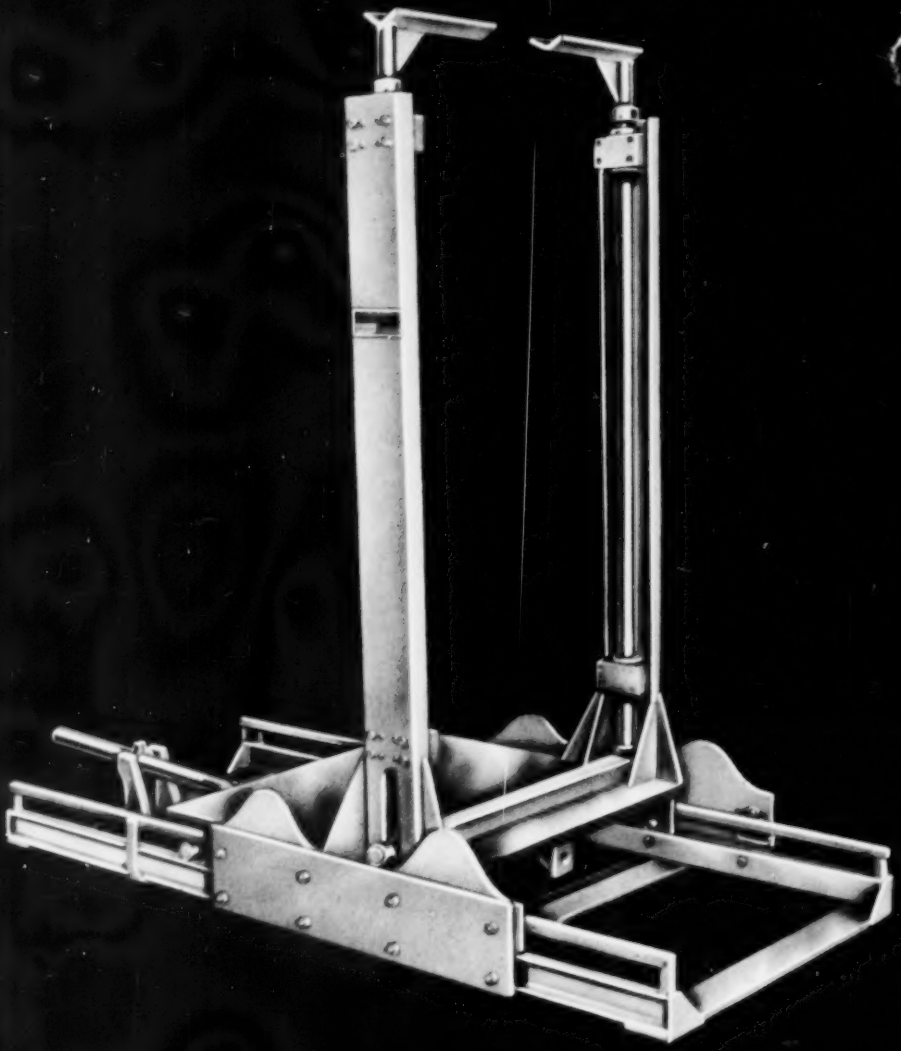

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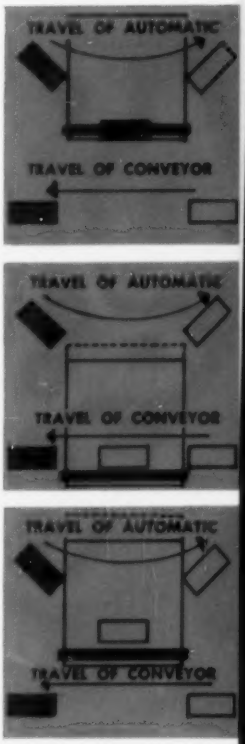

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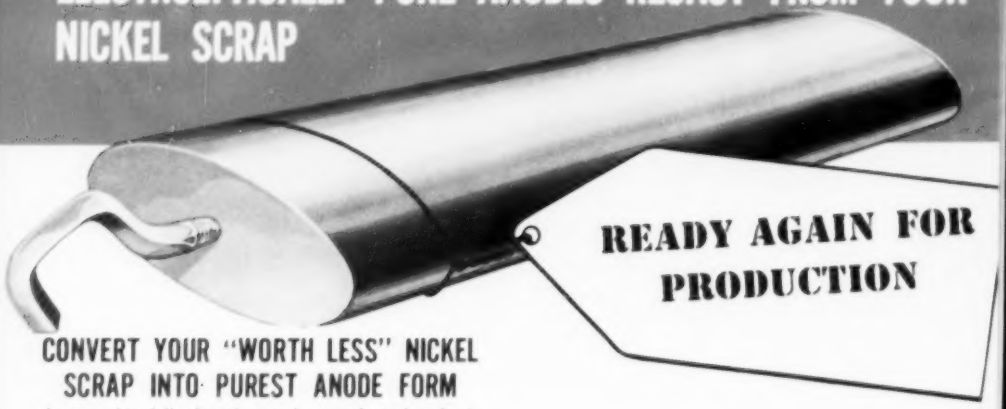

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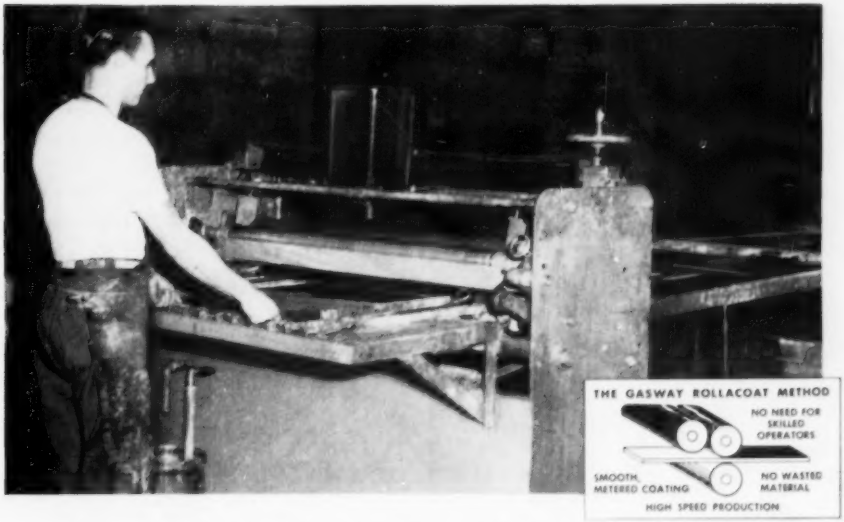

More efficient painting method steps up production and gives 98% enamel coverage for Scioto Sign Company

WITH its Gasway Model 32B Rollacoater, Scioto Sign Company of Kenton, Ohio, reports higher production and an improved paint job due to Gasway's *automatically metered finish which deposits 98% of paint solids directly on the material.* No skilled operators are required to get a uniform film thickness and this Rollacoater handles a range of steel and aluminum panels of equal thickness from 32 square inches to 32 square feet, *without any machine adjustments!*

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No matter what kind of material, there's a Gasway Rollacoater that will coat it . . . on one or both sides. Aluminum, steel, plywood, fibre-board, cardboard, leather, wood, asbestos and other semi-rigid materials are being coated successfully in thicknesses from 35 gauge to 3 inches.

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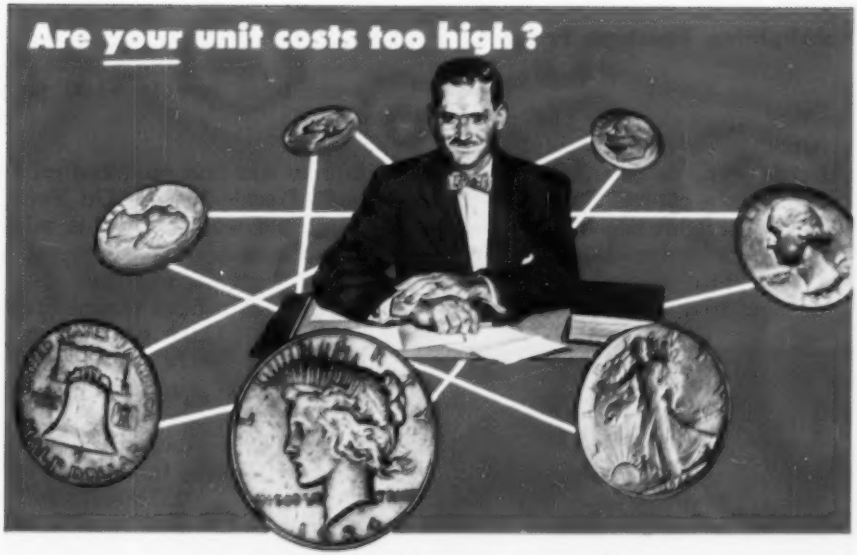
investigated, and patent claims have been filed. Some electrolytic processes are in the pilot-plant stage at present but commercial development is undoubtedly several years in the future.

All of the above processes yield titanium metal in the form of sponge. Melting of this sponge into useful forms is also a difficult operation. An inert atmosphere is required and the choice of mold material is not easy. Graphite and other refractories are dissolved or absorbed by molten titanium, and the resulting metal product has poor structural properties. Water-cooled copper molds are currently in use with at least reasonable success.

Fabrication of titanium metal results in high losses from the scalping of ingots and from machine operations. Reclaiming of scrap is necessary for good economy, but is technically difficult.

Costs

Because of the dearth of technical information on titanium production, it is not possible to estimate costs with any accuracy. Figures presented by the United States Bureau of Mines indicated a cost for their operations of $3.80 per pound. Approximately half of this was for the purchase of titanium tetrachloride. It was further estimated that $1.25 above the cost of raw materials would be reasonable, but this is a government figure including benefits which are not available to industry. The cost of magnesium is about 35 cents per pound, and in theory one pound of magnesium will



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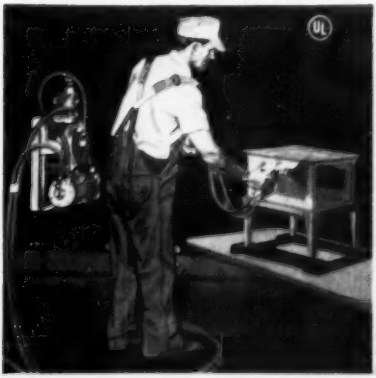

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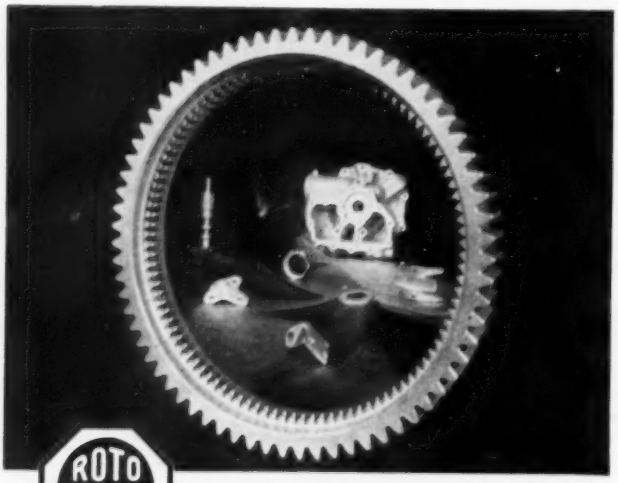
produce approximately one pound of titanium metal. Titanium tetrachloride would be obtained commercially from a captive source, so no reliable cost figure is possible. Something of the order of 15 cents per pound is probable; this would be equivalent to 60 cents per pound of titanium sponge. An estimated selling price for titanium metal five to ten years from now is $3.00 per pound.

Producers

Titanium was first produced on a commercial scale by the Du Pont Company and was offered for sale in 1948. Current capacity is estimated at about 10 tons per day, with increased facilities planned for the near future. Du Pont produces sponge titanium only and does not process it further.

Titanium metal is also being produced at the present time by Titanium Metals Corporation. Present capacity is also 10 tons per day, and more is planned. Magnesium chloride by-product is recovered and electrolyzed to regenerate magnesium metal and chlorine. This company melts the sponge into ingots and further fabricates the material.

Union Carbide and Carbon Chemicals Corporation, Dow Chemical Com-



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pany, and the Crane Company are constructing plants for titanium production this year. Other companies have plants in the planning stages.

Uses

The principal application of titanium metal is in the aircraft industry, especially in military uses. Gas turbine construction requires titanium bar stock, forgings, and sheet. Titanium and titanium alloy sheets are used in aircraft frames and nonstructural parts. Titanium is used to surround the engine where the surface temperature is in the range of 300 to 700 deg. F. Titanium has present and future possibilities in marine applications because of its resistance to corrosion by salt water. It is currently being used for seats and discs in globe valves and for metering discs in fuel systems.

The chemical industries utilize titanium in the form of pipe and pipe fittings. This application has undoubtedly increased markedly because of the light weight and good resistance to corrosion. Storage tanks for liquefied gases have also been fabricated from titanium metal.

Titanium has many military applications because of its good ratio of strength to weight. This is important in

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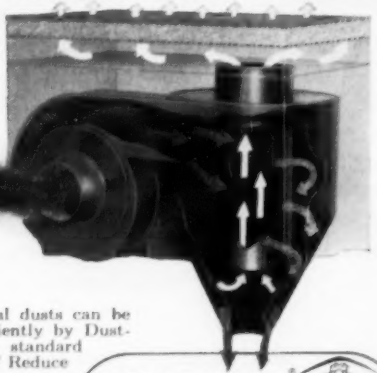
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aircraft, and also in army equipment. A 50 per cent weight reduction has been achieved in some types of infantry equipment.

Electrodeposition

Because of the desirable properties of titanium metal, particularly its resistance to corrosion, many attempts have been made to electrodeposit or electroplate it. None of these attempts has been particularly successful up to this time, but the work will certainly be continued and success will be achieved eventually. Some phases of the work of the United States Bureau of Mines in this field have been discussed by Creamer, Chambers, and White in Report of Investigations No. 5093, "Some Aspects of the Electrodeposition of Titanium and Zirconium Coatings. The remainder of this paper is an abstract of that report.

Titanium is high in the electrochemical displacement series and hence requires a relatively high potential for its reduction. Most electrolytes decompose before the titanium is obtained in reasonable yield.

The problem of contamination of titanium metal also affects the choice of electrolyte. Ultimate properties of titanium metal are seriously impaired by impurities absorbed from

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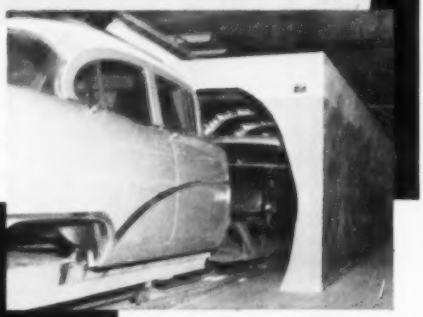

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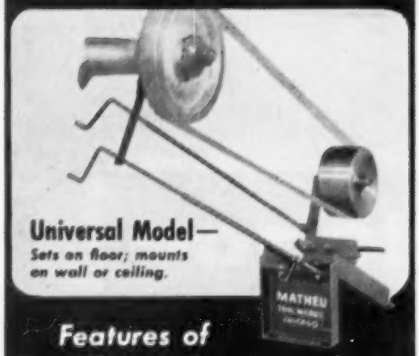
HEAVY PRODUCTION
BACKSTAND IDLERS



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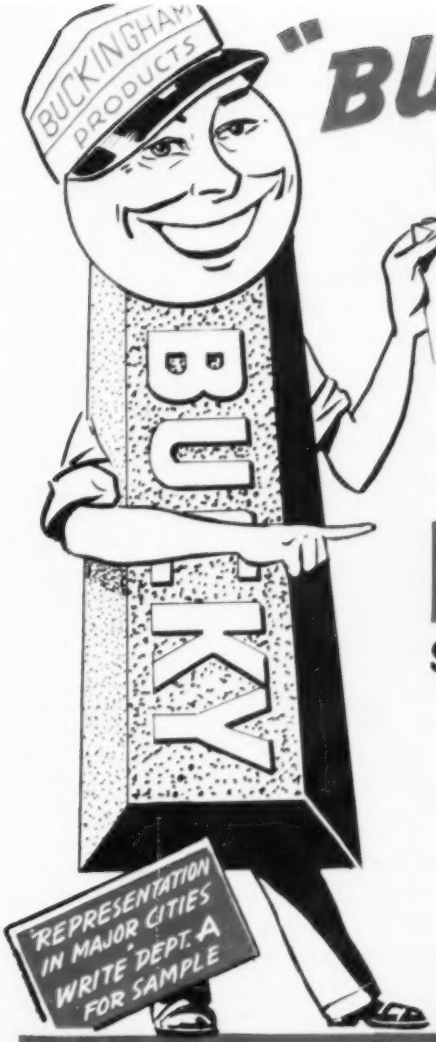
the atmosphere, the bath, or the container. Absorption of impurities is particularly important in the molten state, but even solid titanium particles acquire a film that prevents continuity in the metal. No success has been reported up to now in the formation of coherent deposits.

Fused Salt Electrolytes. The product in fused electrolytes must be powdered titanium, because the molten form would require too high a temperature. Compaction of the metal powder may yield a useful structural form. The powder is, however, easily contaminated because of its high surface area. The most promising electrolytes are simple or complex halides of titanium and a less readily reduced halide such as sodium or lithium. The sodium or lithium salt is needed to reduce the volatility of titanium halide. Cathode efficiencies of 50 to 60 per cent are the rule. Many other fused salts give good solutions of titanium compound, but poor or no deposition can be accomplished.

Non-aqueous Electrolytes. Many non-aqueous electrolytes have been investigated in addition to fused salts, but none of these are particularly promising. A eutectic of magnesium bromide and urea is satisfactory for deposition of cobalt, copper, and chromium, but has not proved satisfactory for titanium. Perhaps substitution of tetraethylurea for urea would be beneficial. Organic amines, amides, hydroxy compounds, and nitrites have been tried without appreciable success.



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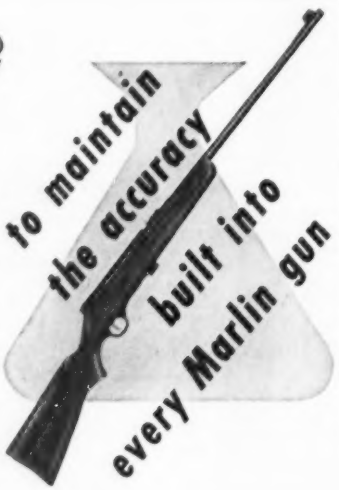
Inorganic compounds, such as anhydrous ammonia or sulfuric acid have been tried, but in all such solutions the electrolyte is reduced before titanium reduction is complete.

Aqueous Electrolytes. There has been a total lack of success in depositing pure titanium metal from any aqueous electrolyte. It is possible to dissolve titanium sponge in fluoboric acid and to obtain electrodeposition, but these deposits have high impurities and very low titanium content. Several patents have been granted in this field, but the results have not generally been confirmed.

Summary. Metal deposits have been obtained only from fused salt electrolytes and not from low-temperature solutions. Quality of the deposit depends on purity of raw materials and care used in preparation. Only a small portion of the metal deposits as plate; most is a nonadherent sponge or powder.

The field of titanium electroposition remains open for continued research and development. There is a great need to develop a fused salt electrolyte which will deposit coherent and adherent plates. There is also some possibility of electrodeposits from non-aqueous electrolytes.

Du-Lite FINISHED



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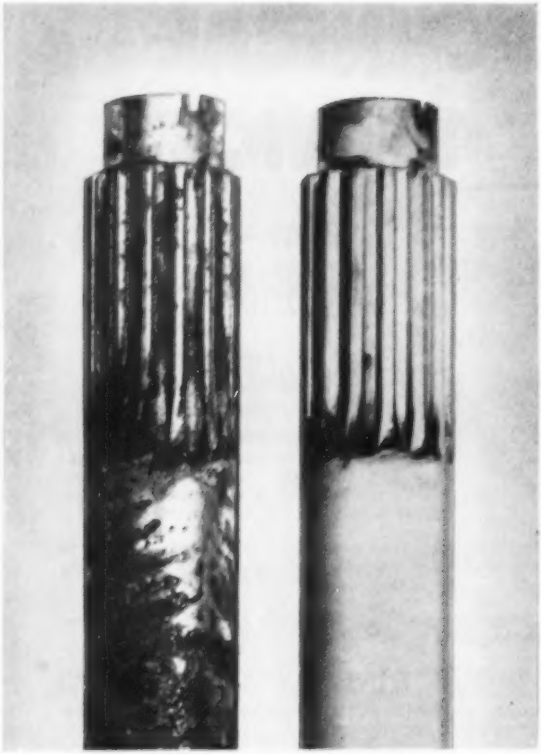
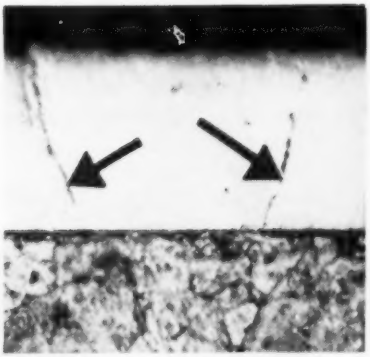


Surface of steel shaft at left, with 0.0005 inch of ordinary chromium, showed rust over entire surface after 100-hour salt spray test.

Shaft at right, with 0.0005 inch of Crack-Free Chromium, was virtually unaffected in the same test.



Photomicrograph showing cross section of etched ordinary chromium plate .00125" thick. Some cracks extend through the deposit to the steel.

Photomicrograph of a cross section of etched Crack-Free Chromium also .00125" thick. Note the absence of cracks.

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New Crack-Free Chromium

Now... more corrosion-resistant chromium plating made possible by Unichrome Crack-Free Chromium Process

Here's the new production process that solves a basic problem . . . that of getting a chromium deposit free from corrosion-admitting cracks. Again an important and long awaited advance in chromium plating has been achieved by United Chromium.

Unichrome Crack-Free Chromium Plating gives ductile deposits which, unlike ordinary chromium deposits, do not crack as thickness builds up. These crack-free finishes assure longer service life, greater reliability and protection.

Look what you gain with Unichrome Crack-Free Chromium Plate

- Much better protection against corrosion than with ordinary hard chromium
- Remarkable leveling action covers surface imperfections
- Improved non-galling, non-seizing properties
- Easier, faster grinding
- Resistance to thermal shock — better protection at elevated temperaure
- Impact resistance
- More ductile deposit
- Easy buffing — as easily as dull nickel

Superior Corrosion Resistance

In hard plate thicknesses, Crack-Free Chromium gives striking results. Even when plated directly on the base metal, it provides a dependable barrier to corrosion. Ordinary chromium of the same thickness is full of cracks—cracks so small they are usually not visible to the unaided eye. Many of these cracks extend all the way down to the base metal, making it impossible for ordinary chromium alone to deliver complete protection against corrosion.

In 100% relative humidity tests conducted at 100° F, parts plated with .0003" of Crack-Free Chromium were rust-free after a full year of exposure. Parts plated with ordinary chromium were completely covered with rust after just a few days. In laboratory and outdoor exposure tests, Crack-Free Chromium has proved its superiority time and time again.

Two-Tone Finish

A matte gray plate, Crack-Free Chromium buffs up readily, like dull nickel, to a high lustre. You can get smart two-tone effects by coloring up only portions of the work.

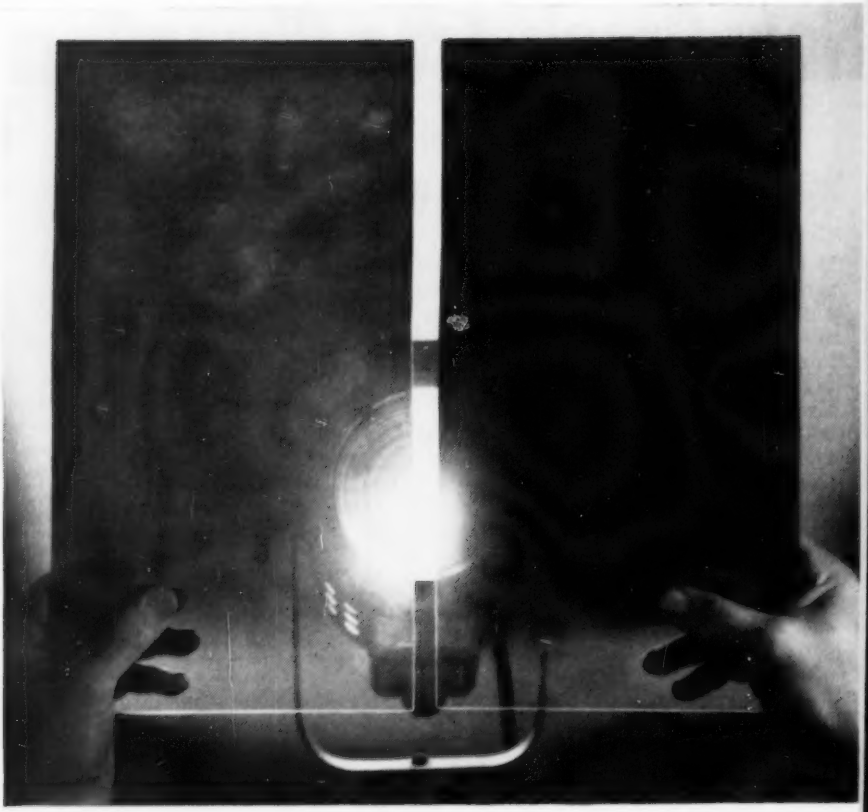
Conserves Nickel

Since it develops a dense, continuous deposit, Crack-Free Chromium doesn't depend on scarce nickel to stop corrosive agents from reaching the base metal. It protects all by itself . . . can be plated directly on steel and zinc die castings for many applications.

Easy Operation

The Unichrome Crack-Free Chromium solution is of the self-regulating type. Important constituents are automatically regulated, simplifying plating operations and solution maintenance.

Send for Bulletin CFC-1. Or ask for a United Chromium engineer to give you details personally.



***Paint applied** to its maximum film thickness by the usual spray method (cold) looks like this in front of a powerful spotlight. Note coverage.*

***Same paint** applied by the DeVilbiss Hot-Spray method produces far greater coverage with a heavier coat, as the glass panel on right shows.*

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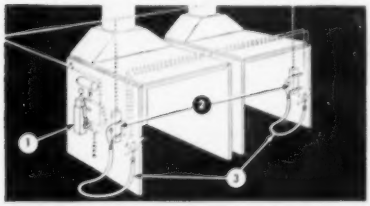
Demonstration on glass proves DeVilbiss Hot Spray cuts finishing costs

Now, using a DeVilbiss Paint Heater, *one* coat sprayed *hot* generally covers better than *two or more* cold-sprayed coats! More paint reaches a surface *and stays there* . . . because thinning paint with heat – rather than with solvent – permits application of higher solid-content material for heavier coats and greatly reduced overspray.

This superior finishing method saves up to 50% in material and labor costs; may be used on all types of products – from autos, furniture, and appliances to military tanks. For facts on how much the DeVilbiss Paint Heater can save *you*, call your DeVilbiss supplier!



DeVilbiss Hot-Spray system is foolproof; adapts to multiple gun hook-ups. Hot water from master heater (1) heats paint in exchangers (2); heat-jacketed hose assemblies (3) keep paint hot right up to guns, assuring uniform viscosity at all times at each gun.

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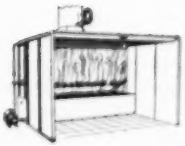

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For more data circle 164 on Reader Service Card

Tiny Electronic Parts Tumbled to Precision Finishes

By A. W. KOLLOSCH
Product Engineer
Sylvania Electric Products, Inc.

THE METAL PARTS PLANT at York, Pa., is one of the newest of 45 plants of Sylvania Electric Products, Inc. Nearly all of the products of the York plant are small precision stampings. Many delicate metal components of electronic and electrical circuits are manufactured here, including parts for television tubes and for other electronic tubes.

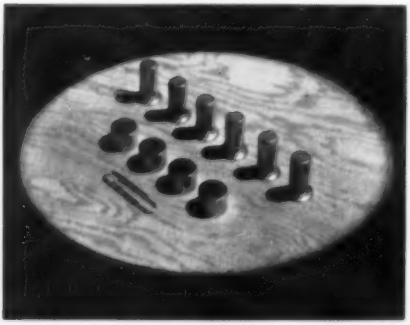


Fig. 1—Finished and approved parts. Grid cups (K2-A417) are on the left; rectifier caps (K-2055) toward the right. Paper clip in the foreground shows relative sizes of parts.

Millions of tiny parts are produced every day at speeds hard to count. Most of the stampings are formed from sheet stock varying from 0.005 to 0.015 inch thick. Some parts are so small that 50,000 of them can be held in the palm of one hand. Parts are fabricated from stainless steel, carbon steel, aluminum, brass, nickel, phosphor bronze, nickel plated steel, and copper. A few parts are of precious and semi-precious metals: tungsten, molybdenum, tantalum and even gold.

Tolerances are close; on some parts the tolerance may be plus or minus 0.0005 inch, on others as small as plus or minus 0.0002 inch.

Precision tooling, multislide or press machines specially designed for their specific jobs, automatic setups and an exacting program of quality control are the four factors that contribute to the York plant's successful operation. The multislide machines produce hundreds of millions of intricate parts each year for products of the electronics and other industries. Many of these parts are formed in complicated tubular shapes.

As produced by the many machines and dies, the tiny stampings come out with burrs and rough edges. These are imperceptible to the untrained eye, and even the fingers can scarcely feel them. Nevertheless, the almost undetectable burrs and rough edges must be made smooth by precision barrel finishing. Before they enter the tumbling

barrels, the parts are given a thorough degreasing treatment to remove every trace of the heavy chlorinated oil used during stamping.

The plant's modern tumbling room contains six barrels, providing a total of nine rubber lined and two steel compartments, and a centrifugal dryer. The correct method of loading a tumbling compartment at the Sylvania York plant is detailed in five steps:

1. Place the designated number of parts in the barrel.
2. Add chips to the listed percentage of the load.
3. Add the correct amount of water.
4. Add the specified tumbling compound.
5. Place the lid in position and start tumbling.

The aluminum oxide tumbling chips (Lorco) consist mainly of No. 4, the size of fine gravel. They must be cleaned twice a week and are screened weekly on a shaker screen to eliminate the chips that have worn undersize since the previous screening. When rescreening is done, an operator picks out all foreign substances, using a hand magnet to remove the particles of magnetic material that have found their way into the chips. The twice-a-week cleaning is done in the tumbling barrels, using Lorco "GW" degreasing compound.

Unloading of a barrel after tumbling must be done with extreme gentleness to avoid marring the delicate parts. On grid cups and other fragile parts, the chips and parts are dumped together into one 10 by 10 inch box at a time. The contents of each box are then turned out carefully on a shaker screen for separation.

Tumbling procedures vary a great deal because of the myriad variations in the parts being processed. Let us follow two typical parts through the tumbling barrels. One procedure is simple, the other very complicated.

Grid cups. Part K2-A417, whose tumbling procedure we will first examine, is a small stainless steel cup, roughy ½ inch in diameter by ⅜ inch high. It's the lens of a television electron gun. A small hole 0.025 inch in diameter is punched precisely in the exact center of the cup, and a beam of electrons is directed through this hole for focusing. Dimensional exactitude is of the utmost importance.

The finished parts are required to have smooth edges, no burrs on either the edge of the cup or the tiny hole, a bright, clean surface and no water stains. The latter two requirements are considered to be the most difficult.

Tumbling is done in a two-compartment barrel. Two full 10 by 10 inch boxes of the thimble-like parts are loaded into each of the 2 cu. ft. compartments. No. 4 chips are added to constitute 60 per cent of the total load. Hot water is added to a depth of 2 inches above the level of the load, followed by a cup of liquid descaling compound (Lorco "DL"). This is a concentrated liquid acid compound, developed primarily to remove heat treat and forge scale. In this application, however, its purpose is to assure a bright, shiny finish.

The load of parts and chips is tumb-

Fig. 2—As delivered from the stamping press, the grid cups have nearly imperceptible burrs around the edges. The burrs and other defects must be removed in the tumbling barrels.

led for 1½ hours at 16 r.p.m. After tumbling, the parts are given a hand dip rinse in cold running water and then dried with hot air in the centrifugal dryer. Though this is a simple job in theory, in practice it has proved quite difficult to develop a procedure that would secure satisfactory results. Insignificant scratches, tiny dents, or specks of minute discoloration are all causes for rejecting the tiny cups.

Top cap for High-voltage Rectifier. Part K-2055 is a thimble roughly 5/16 inch in diameter by 13/16 inch high, having a flanged base ½ inch in diameter. A row of six holes runs around the bottom of the tube, just above the base. This deceptively simple part is formed from a special Sylvania alloy that has the same coefficient of expansion as glass. In subsequent processing, the cap will be fired for ½ hour at 2,300 deg. F. in wet dissociated ammonia and will receive a glass seal.

Unless the part emerges from the tumbling barrel with a completely clean surface, the thin band of glass will not adhere properly. To avoid peeling and to assure a perfect seal, a complicated four-stage tumbling procedure has been worked out. Parts not tumbled by this method may look just as bright and clean to the eye, but unless all details of the procedure are faithfully followed, the parts will be rejected later on.

In the first stage, no parts are tumbled. The chips, which will in later stages constitute 40 per cent of the total load, are placed in one 4 cu. ft. compartment. Cold water is added to a level of 3 inches above the chips and along with 1½ cups of Lorco "GW" degreasing compound, a highly concentrated liquid detergent and wetting agent. The chips are tumbled for five

Fig. 3—The author, A. W. Kollosch, checks a finished part against tumbling specifications. Finished parts are required to have smooth edges, no burrs, a bright, clean surface, and no water stains. The latter two requirements are considered to be the most difficult to attain. Small scratches and dents, or specks of discoloration are causes for rejection.

minutes at 19.5 r.p.m. and then rinsed with cold water.

Before the parts are added, everything else is prepared for the next run. The water level is low—1 inch under the chip level. Three and a half cups of tumbling compound are added to the water. The compound is Lorco "3A," which contains a fine abrasive and a strong cushioning agent to soften the cut. Tumbling is done for 1 minute at 19.5 r.p.m. without parts in order to secure uniform suspension of the powder compound before the parts are added. Normal load includes 24,000 parts. Tumbling is done for four hours at 19.5 revolutions per minute, followed by a cold water rinse.

The third stage is again a degreasing and cleaning run. The water level is restored to 3 inches above the chip level, and 1½ cups of Lorco "GW" degreasing compound are added. Tumbling is done for two minutes at 19.5 r.p.m. The parts are then rinsed with cold water, taken from the barrel and separated from the chips.

The parts are transferred to two compartments of another barrel for the fourth or drying stage. Sawdust is added to constitute 80 per cent of the total load, and the parts are tumbled at 18 r.p.m. until dry.

These two procedures may be taken as representative of the detailed tumbling procedures that have been worked out for each part. The use of specialized compounds is indispensable to the success of precision barrel finishing. Altogether, nine different compounds are used, all manufactured by Lord Chemical Corp., York, Pa.

After tumbling, as after other operations throughout the plant, an exacting quality control procedure is followed. A lot of 120 tumbled samples is examined periodically for flaws. If as few as five flaws are found in one sample lot, the entire day's production of the tumbling barrels must be hand sorted.

Fig. 4—Inspector Romaine Gross, of the quality control department, puts the grid cup under a microscope to check on the appearance of the tumble finished part.

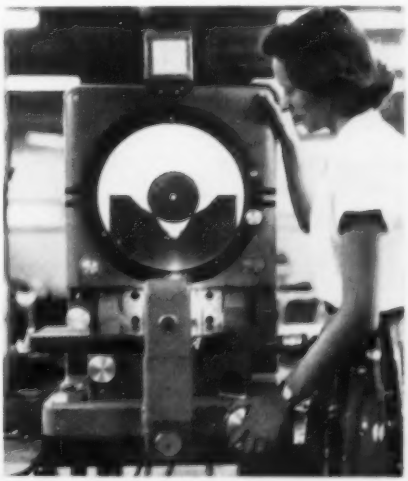


Fig. 5—Doris Witta checks dimensional accuracy of a tenfold magnified shadow of the grid cup. (Photographs courtesy the Lord Chemical Corporation, York, Pennsylvania)

Practical Applications

Microscopes are often needed in the quality department for examination of some of the extremely tiny parts. Shadowgraphs, which project a magnified shadow of the part (magnified up to 100X) against a calibrated screen, are also used to check hairline deviations from the specified tolerances.

Only by eternal vigilance throughout the plant is a continuous flow of high-quality products assured from the beginning to the end of the manufacturing cycle.

For more data circle **37** on Reader Service Card

★ ★ ★

Painting Lawn Furniture Electrostatically

From an interview with:
Saunders Jones, Factory Manager
Atlanta Stove Works, Inc.
Atlanta, Georgia

AS DEMANDS for products change, so do methods of production change.

For instance, Atlanta Stove Works, Inc., in Atlanta, Georgia, for well over a half century was well known as a producer of "stoves." Not modern gas and electric ranges as we know them today, but wood-burning and coal-burning stoves! The word "Atlanta" was a by-word in many a "modern" kitchen before the turn of the century.

Atlanta still produces some stoves, ranges and modern gas space heaters with some cast iron cooking utensils and cast iron lawn furniture, but an important item for this company today is the Atlanta Leisure Line of outdoor lawn furniture.

This beautifully designed steel furniture is available in a variety of colors. Gliders come in two sizes, two and three seaters, and the chairs feature tubular frames and perforated seats and backs. A newer, popular item is the Cue Cart (Fig. 1) for outdoor cooking.

All lawn furniture production—from raw steel to finished products—is handled under one roof in the Atlanta Stove Works plant. The plant produces approximately 50 complete gliders per hour. Chair production is approximately 150 per hour. Finishing of these chairs and gliders begins when the fabricated metal parts are attached to a 1000-foot overhead conveyor, which operates at 7½ feet per minute. One chair seat and chair back are attached by hooks to the conveyor at 3-foot centers. Glider seats, backs, and arm rests are hung alternately on the line. The conveyor first takes the furniture parts through a 5-stage washing and phosphatizing process.

Furniture is painted in brilliant whites, green, yellow and red with electrostatic spray painting equipment.

★ ★ ★

←Fig. 1—Shown in the sample room at Atlanta Stove Works, Inc., with some of the company's products, are (left to right) J. Fred King, research and development engineer (demonstrating cue cart); Saunders Jones, factory manager, and M. J. Miller, manager.

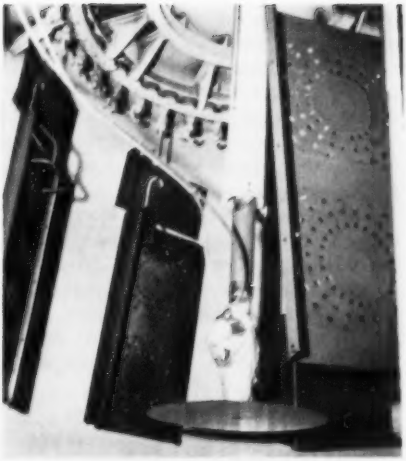


Fig. 2—One of two electrostatic painting stations, where outdoor lawn furniture is painted automatically with the Ransburg No. 2 Process.

Frames for the furniture are flow coated. Painting is handled at two stations (Fig. 2). At the first station, recessed areas of parts being painted are hand sprayed. Parts then enter the first of two electrostatic spray areas, in which one side of the objects is painted; parts then travel to the second electrostatic area, where the other side is painted.

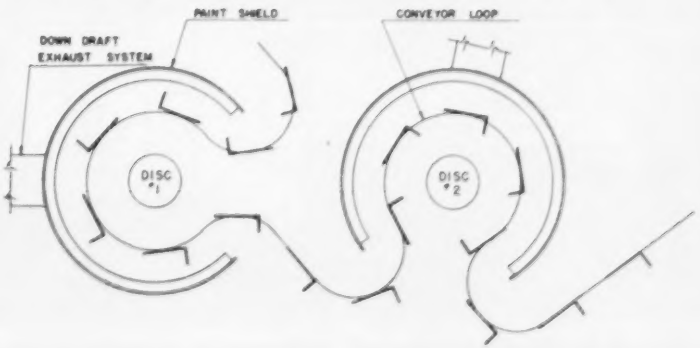
At each paint station, a Ransburg No. 2 Process reciprocating disc atomizer (Fig. 3), 25 inches in diameter, is mounted overhead in the center of a loop made by the conveyor. Paint is pumped to the center of the disc which rotates rapidly to feed paint to the atomizing edge. High d.c. voltage is imposed on the disc, establishing an electrostatic field between the disc and the electrically-grounded parts hanging on the conveyor. The electrostatic field atomizes the coating material into a spray, attracting it to the parts.

After a dry off, seats and backs of gliders and chairs go to a masking station where a second color is applied by hand. Parts move along into the gas-fired convection oven where they bake for 27 minutes at temperatures ranging from 275 to 325 deg. F. Finished parts then are assembled and packaged.

In addition to lawn furniture, parts, the top, back and two sides of the gas space heaters are painted electrostatically, as are the Cue Cart handles. Different size and different shaped pieces are handled easily, as the reciprocating disc atomizer is adjustable for various painting requirements.

For more data circle **38** on Reader Service Card

Diagram (plan view) of Electrostatic Spray Painting Stations



Oldsmobile Automates Electroplating At New Bumper Plant

Here is the story of how Oldsmobile's automatic selective cell-type plating system was worked out, and how its plating machines are loaded and unloaded automatically.

THE AVAILABILITY of better instruments, equipment and knowledge often induce management to "go automatic." This is particularly true when a company decides to expand facilities.

A case in point is the new Oldsmobile bumper bar plating installation in Lansing, Michigan.

In recent years, automatic plating machines have demonstrated their ability to handle loads of a ton or more and lifts as high as 10 feet.

Machines have been adapted to perform such special tasks as delayed setdown in a tank and advanced pick-up. Plating equipment manufacturers have also developed mechanisms for automatically loading and unloading the plating machines.

When Oldsmobile had to set up a plating operation that would meet increasing production, which climbed over 90 per cent in the past two years, management made use of every available automatic tool.

For instance, automatic loading and unloading mechanisms were specified for the copper, nickel and chromium plating machines. The mechanisms were practically a necessity here: Oldsmobile is loading racks that weigh, when full, close to 1,000 pounds at the rate of one every 163 seconds.

Selective Cell-Type Plating

In a cell-type operation, plating is carried on in many individual cells with racks stationary during a fixed time cycle. In conventional automatic plating, racks travel continuously or intermittently through a large tank. Cell-type plating is obviously the more difficult of the two to make fully automatic and continuous. To do so, it is necessary that the plating section receive racks coming from pretreatment tanks on a fixed time cycle, and deliver to af-

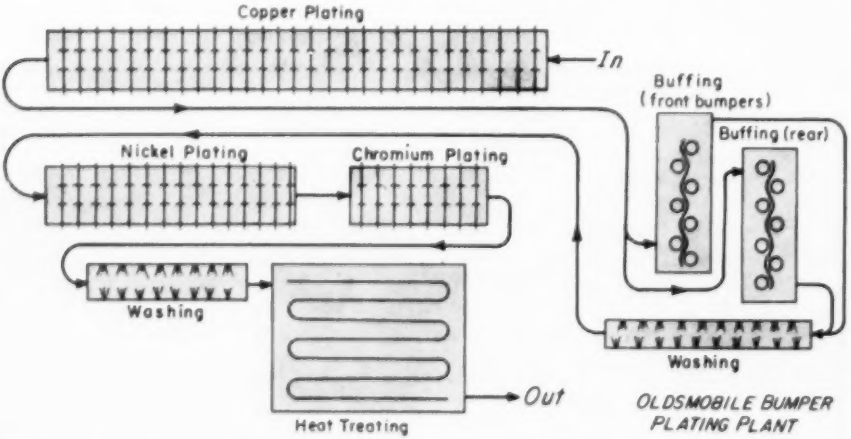


Fig. 1—Schematic drawing showing layout of Oldsmobile bumper plating plant. Process is continuous and conveyorized, with loading and unloading of racks done automatically.

ter-treatment tanks on another cycle.

The operation has to be made selective in that racks to be plated must be deposited in an empty cell, and by-pass all other cells. Plated racks have to be picked up from a cell after a predetermined time, then by-pass other cells as they are delivered to the after-treatment tanks.

Why cell-type plating in the first place? The wrap-around shape of today's bumpers requires the use of conforming anodes to facilitate the even distribution of metal coating over the curved bar. This type of plating is carried out best in individual cells, where anodes may be arranged around the sides of the cell to conform to the shape of the bumper bar.

Plating Bumpers Automatically

Flat steel is automatically polished, then after bumper bars are formed and brackets welded on them, units are inspected and given a final touch-up with a hand polishing wheel, and subsequently loaded on a rack. The rack is conveyed to the copper plating section of the Hanson-Van Winkle-Munning automatic plating machine by an auxiliary materials handling system.

Bumper bars are automatically loaded onto the plating conveyor, then given an alkali wash, cathodic cleaning, cold rinse, hot rinse, acid etch, cold rinse, another cold rinse, anodic cleaning, cold rinse, acid dip, cold rinse and a cathodic cyanide dip. Immersion in a cyanide copper strike bath and a reclaim rinse follow. Bars are then plated (0.0015 inch thick) in the cell-type copper plating baths. After that, they are put through a reclaim rinse bath and given a final rinsing. As racks come out of the hot rinse tank, they are automatically unloaded from the plating conveyor to the auxiliary conveyor.

Twenty-four cells are employed for copper plating, producing 22 racks of plated parts per hour. All tanks in this section as well as the other sections of the automatic plating machine are 9½ feet wide and 8 feet deep.

Racks then pass on to the automatic buffing lines. There are two buffing lines: one for front bumpers, one for rear units. Carrying fixtures are directed to proper areas by adjusting a selector switch on the fixture. Bumper

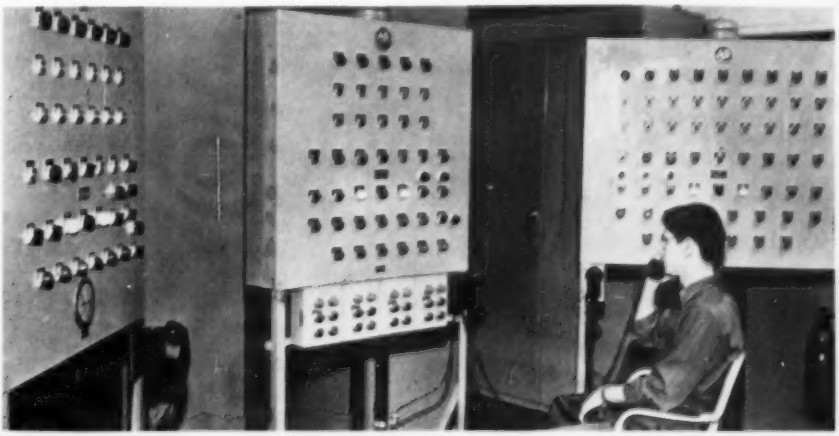


Fig. 2—Main control room. All electrical controls for the conveyor systems are housed here. One operator mans this station, and can communicate with all the other operators.

bars are buffed, then washed.

Westinghouse engineers have aided Oldsmobile in attaining a degree of leveling in copper plating, using the Wes-X PR process. Work is continuing, and the company believes copper finishes will eventually prove smooth and bright enough to make buffing operations unnecessary. Contributing to better finishes is the longer plating time now employed—one hour as opposed to 40 minutes formerly used.

Nickel plating follows. Racks are automatically loaded on the H-VW-M nickel plating conveyor exactly as they were on the copper plating machine. Bumpers are cathodically cleaned, cold rinsed, twice in separate tanks, dipped in cathodic cyanide, given a flash coating of cyanide copper, cold rinsed, then immersed in a bright nickel bath. Plating (0.0008 inch) is accomplished in individual cells equipped with conforming anodes. A reclaim rinse, a cold rinse and a hot rinse follow the nickel plating. Production of the nickel section is 22 racks per hour. Plating time is 24½ minutes. The nickel plating section contains 10 cells.

Bars are reracked for chromium plating. In the chromium plating operation, bars are automatically loaded, then cathodically cleaned, cold rinsed, immersed in a cathodic acid bath, cold rinsed and then warm rinsed. They are next immersed in one of three cells located in a 25 foot chromium plating tank. Two reclaim rinses, a cold rinse and a hot rinse follow. Production here is 30 racks per hour. Plating time is 2½ minutes; 3 cells are used.

After chromium plating, bars are automatically unloaded, reracked and sent through a 550 deg. F. stress relief oven, the trip taking 30 minutes. This heating prevents hydrogen embrittlement; that is, it makes the plating ductile and prevents future cracking.

Every electrified cell has its own generator. There are 24 10,000 amp., 12

Fig. 3—Loading racks prior to copper plating. Worker in background is touching up rough spots with a hand buffing wheel. Worker in foreground is loading front bumpers on the plating rack. Note 10 bumpers to every rack.

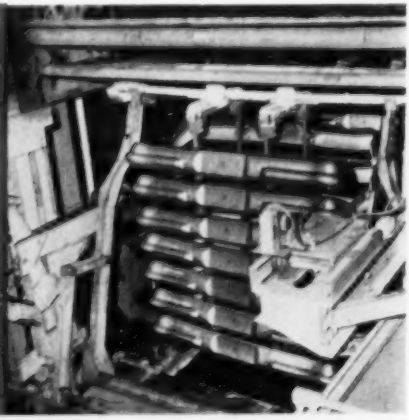
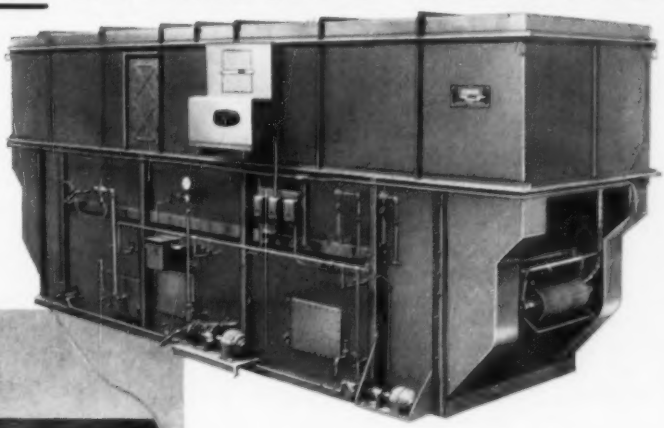


Fig. 4—Transferring rack load of bumpers to the copper plating machine. Transfer mechanism is about to deposit a rack onto a work carrier of the plating conveyor. The work carrier is riding on the elevator assembly.

Scrubs out the last speck of *DIRT*

CIRCOSONIC ULTRASONIC DEGREASER

Typical Circo conveyor type vapor degreaser with integral ultrasonic chamber.



. . Low frequency *FLAT*

Transducers make the difference!

Use Circosonic whenever cleanliness must meet stringent industrial or military standards. New transducer operates at lower frequency (100 kc) which cuts shadow effect so that ultrasonic waves curve around corners . . . remove every last speck of oil, grease, lapping compound and dirt from deepest recesses and capillaries as no other method can do. New flat shape beams sound energy over wider area . . . requires no critical positioning when cleaning small parts like bearings and electronic components . . . extends to any desired length for large shapes like transmission pumps and gears. Circosonic units provide new standards of cleanliness while cutting cleaning time from hours to *seconds* . . . may also be integrated into existing cleaning equipment.

SINCE 1923

CIRCO

EQUIPMENT COMPANY

MANY STANDARD MODELS . . . Units from 500 watts to 25 kw. Available separately or integrated with Circo Vapor Degreasers, conveyorized or hand operated. All backed by nationwide technical field service.

YOUR INQUIRY BRINGS complete ultrasonic technical data . . . plus authoritative 32-page Vapor Degreasing Manual. No obligation, of course.

128 Central Avenue, Clark (Rahway), New Jersey Offices in principal cities

PER-SOLV (Perchlorethylene) **CIRCO-SOLV** (Trichlorethylene)

Vapor and Ultrasonic Degreasers • Metal Parts Washers • Dryers • Solvent Recovery Stills

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volt sets for the copper cell-plating.

There are ten 7,500 amp., 15 volt sets for the ten nickel cells, two 15,000 amp., 12 volt sets for the 2 chromium cells. For each electrified cell in the pretreatment cycles there is an individual set. These are mostly 7,500 amp., 9 volt, units, although there is a 15,000 amp. unit on an acid etch and a 5,000 amp. on another electrified tank.

Cell-type plating is usually carried on by having an operator deposit work in a plating bath with an overhead hoist. After the plating time is up, he goes back to the bath and picks up the work and walks it to the next station.

To get the production desired, Oldsmobile set up 24 plating cells located in six tanks on the copper line. The nickel line has 10; the chromium, 3. Each set of plating cells is served by a common elevator, but individual racks are lifted and lowered selectively by means of a solenoid-operated flipper mechanism.

When the plating time is up, the rack is automatically picked up and conveyed to a reclaim rinse tank. A new rack load is then brought from the cleaning cycle and deposited into the empty plating cell where it remains stationary for the full plating cycle. Controlling the ascent and descent of the work carriers is the flipper mechanism at each cell.

Each machine consists of a pre-cleaning, plating and rinsing section. The overall operation is so coordinated that the cleaning section delivers to the plating section and the plating section delivers to the rinsing section in accordance with a predetermined time cycle.

When work loads become as big and as heavy as they are at Oldsmobile, automatic load and unload mechanisms

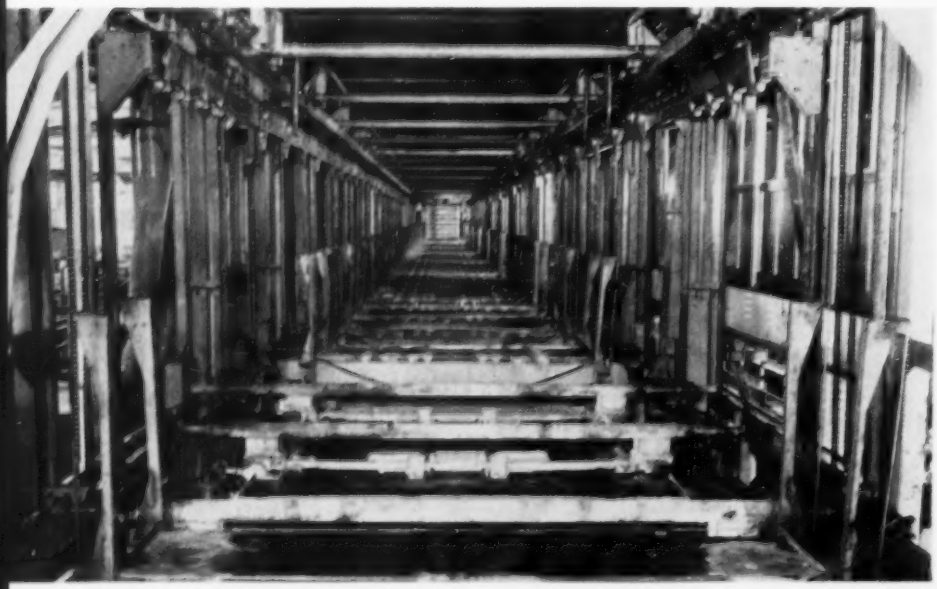
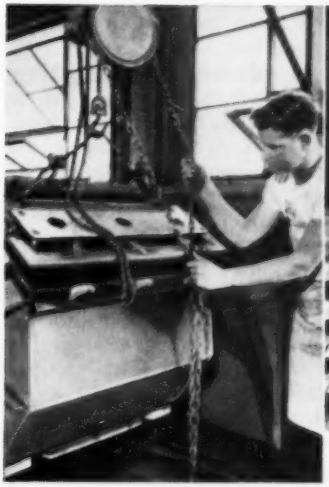


Fig. 5—Copper plating line with elevator down, showing series of treatment baths.

A 1955 ALMCO SUPERSHEEN AWARD WINNER



How Aircraft Parts Firm Saves $124,000 With One Supersheen Barrel

Every week this Almco SUPERSHEEN fixture-type barrel pays for itself at the Le Roy Machine Co., a New York manufacturer of aircraft and automotive parts. Production of finished compressor rotor disks for jet engines has been increased 450 percent at a cost-saving rate of $124,000 annually!

. . . Prior to its installation, the disks were deburred by file and wire brush—a tedious job that averaged 18 hours a piece. . .

Working with Le Roy, finishing engineers at Almco's Newark lab carefully determined the correct Supersheen media and compounds, barrel rpm, time cycle, water level and type of fixture required to obtain the fastest possible cutting, grinding and polishing action on these disks—yet meet rigid Air Force specifications.

Above you see the results: SUPERSHEEN finished, the disks are inspected under powerful magnifying glass; and critical break-edges are right down to A. F. specs.

Not only is the finish absolutely uniform, *but finishing time has been reduced from 18 hours to 4 hours per disk!*

You, too, can improve quality and make important savings in your finishing department with the SUPERSHEEN METHOD. So write today for further information and literature.

Division of Queen Stove Works, Inc.

ALMCO

811 Marshall Street
Albert Lea, Minnesota

Albert Lea • Newark
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New Haven • Los Angeles

SUPERSHEEN METHOD FOR SPEED FINISHING

For more data circle 166 on Reader Service Card

for the plating machine become practically a production necessity.

A transfer mechanism, built by Hanson-Van Winkle-Munning Co., Matawan, N. J., does the loading and unloading. It consists basically of a pair of arms, pivoted at one end, that engages the cross bar of the plating rack. In loading, the rack is carried from an auxiliary conveyor system fixture, a distance of about seven feet, to an empty work carrier on the plating conveyor. The unloading step is similar.

Because of the weight and size of the work load, three special automatic plating conveyors, based on the standard elevator-type design, had to be built.

Each of three conveyors has separate hydraulically-operated elevator mechanisms for the three phases of the plating operation—pretreatment, plating and rinsing. Racks of bars over the pretreatment tanks are elevated, advanced and lowered simultaneously. The racks in the rinsing section are handled in the same manner. Racks for plating cells are individually and selectively handled.

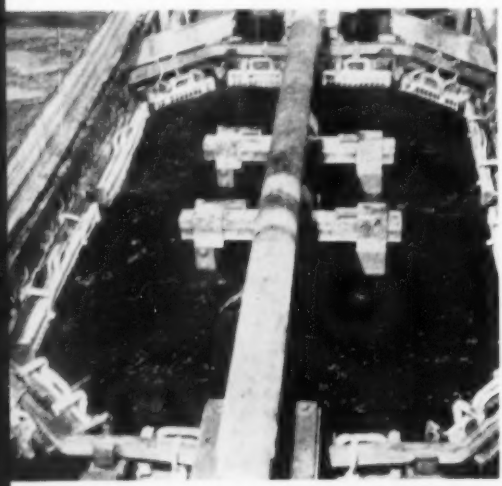


Fig. 6—Plating a rack of bumpers in individual cells. Note anodes hung on sides of the cell to conform to the shape of the racked bumpers. The shape of today's bumpers requires conforming anodes to give even plate distribution.

Racks are advanced from the pretreatment cycle to the cell-plating cycle while immersed in the final pre-treatment rinse bath. A transfer bar moves the carrier horizontally while it is in this tank, until it is in a position to be picked up again. Transfer from plating to rinsing takes place conversely.

Special features of the plating machines include provisions for advanced pick-up and delayed set-down. For instance, during a rinse and acid etch in the pretreatment phase of the copper plating cycle, carriers are picked up early. This is done by a separately actuated hydraulic mechanism. The operation is controlled by an adjustable timer located in the main control panel of the conveyor.

Delayed set-down is required during the cathodic etch in the chrome plating cycle, and it functions to delay entry of the rack into the treatment. It operates the same way the advanced pick-up does.

Auxiliary Conveyor System Gives Robot Control

Oldsmobile had to automate the conveying operations before, between and after the three plating steps. To do this, the company had Jervis B. Webb Company, Detroit, build an auxiliary conveyor system whose overall length is close to a mile. Conveying takes place on four separate levels, each level being connected by ramps and elevators.

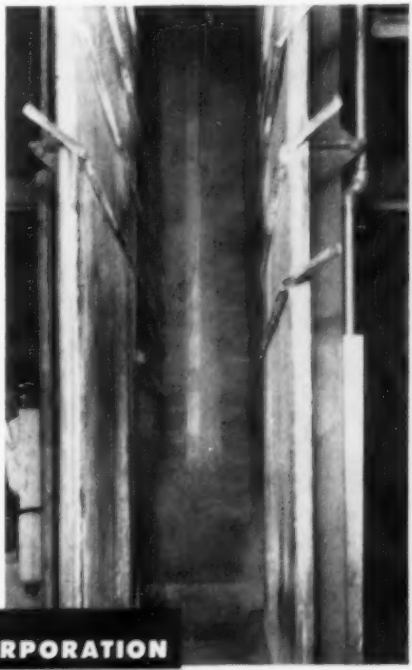
The fixtures carrying racks of bumper bars act like robots in that they automatically find their way to a designated station, their progress being controlled by 3,000 limit switches in the system. More than 2,500 bumpers may be undergoing processing at the same time.

No scale on nozzles after four months' spray phosphatizing!

THAT'S THE DIVOBOND SUCCESS-STORY AT BENJAMIN ELECTRIC MANUFACTURING CO.

"In the past we had considerable trouble with spray nozzles clogging and heating coils loading up. This required weekly maintenance in order to keep the machine operating. Since using improved Divobond for four months, we have never had to interrupt operations to clean the spray nozzles," reports G. F. Nieman, Works Manager of Benjamin Electric!

Yes—it's a fact that improved DIVOBOND not only cleans and phosphatizes in one operation, but it eliminates excessive downtime for maintenance. Control of the solution is simple . . . because the pH is not critical. And Divobond solutions will not form sludge and scale as other phosphatizing materials commonly do. Divobond is an important improvement in cleaning and phosphatizing. For proof, write for detailed information or an on-the-spot demonstration!



THE DIVERSEY CORPORATION

1820 Roscoe Street, Chicago 13, Illinois

(In Canada: The Diversey Corporation (Canada) Ltd., Port Credit, Ont.)

For more data circle 167 on Reader Service Card

Practical Applications

Automatic features of the system include transfer from one loop to another, the by-passing of log-jammed areas, and floating on the moving chain when a slow-up occurs.

This power-and-free conveyor system was designed to convey 1,000 pound loads. It is divided into two main parts, namely the copper-nickel and the chrome systems.

The 29 lifts include such features as two-speed operation, carrier stabilizers, automatic transfer mechanism on and off the lift section and limit switch protection devices. Two 36 by 72 by 9 inch panels and 30,000 to 40,000 feet of electrical wiring control each lift.

This system also includes 11 spring pusher type power-and-free conveyors, and six solid pusher conveyors. The spring pusher conveyor was designed to store in banks the 5 foot long plating rack carriers without stopping the conveyor. The pushers are spaced at 10 foot-8 inch centers.

Fig. 7—Motor-generator sets for the 24 copper plating cells. Each cell has current supplied by 10,000 ampere, 12 volt sets. Starters and PR control panels are shown on the left. (Photographs courtesy Oldsmobile Div., General Motors Corporation, and Hanson-Van Winkle-Munning Company, Matawan, N. J.)

To meet the increasing demands placed upon plated surfaces by the heavy use of salt and other corrosive mixtures on the highways in winter, Oldsmobile has undertaken a program to make sure that high quality is maintained in plating operations. It includes several specific quality control measures. Inspectors who are members of a separate and autonomous department establish quality standards. They have set high ones for this operation and, compromise on quality has never been possible. Inspection of bars is performed after each processing step. Bars with minor blemishes are touched by an operator with a hand buffing wheel, while bars with more serious burns are stripped and replated.

All plating baths have their own electrolytic purification system, and each tank has its own filtering and heat-exchange system. All water used in the plating operation and rinse baths is deionized. In addition, racks and bars coming out of each bath are identified. If a poor bar shows up, the cause can be immediately located and corrected.

For more data circle **39** on Reader Service Card

★ ★ ★

Finishing Checker Cabs

DID YOU EVER SHOUT "Hey, taxi," and then climb into a cab that looked familiar but which you couldn't identify as a standard make automobile? Chances are that it was one of the specially built taxicabs manufactured by the Checker Cab Manufacturing Corporation, Kalamazoo, Michigan.

This company has been manufacturing, from the ground up, taxicabs for fleet owners all over the world, since

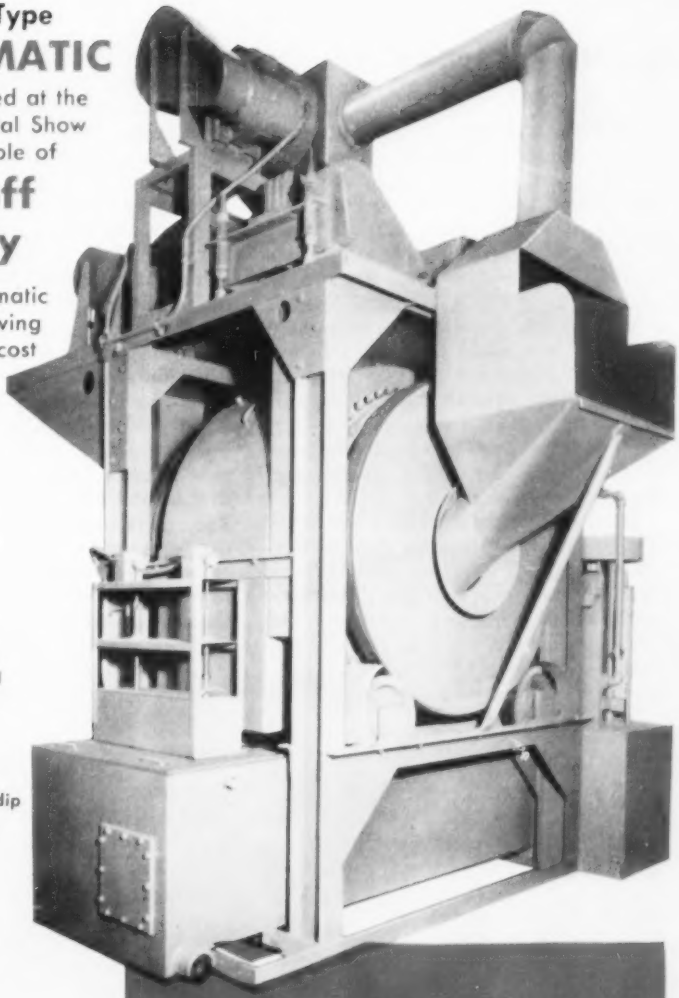
This Cabinet Type

RANSOMATIC

that was exhibited at the Philadelphia Metal Show is another example of

Ransohoff Ingenuity

in building automatic equipment for saving time, labor and cost on metal surface treatments



The Push of a Button Starts a Cycle of:

- transfer of work from tank of cold water into drum
- cold line rinse
- drain
- recirculated chromate bright dip
- drain
- cold line rinse
- drain
- recirculated alkaline bleach
- drain
- hot water rinse
- drain
- recirculated hot air dry off
- unload

Similar Drum or Cabinet Type Ransomatics can be built in any size and for any combination of solutions for metal surface treatment.

RANSOHOFF, INC.

North Fifth and Ford Blvd.

HAMILTON, OHIO

For more data circle 168 on Reader Service Card

1923. These vehicles are specially built for the tough service they receive as taxicabs, and are finished to the fleet-owners' specifications as to color and special designs which identify each fleet. Right now this company turns out 25 cabs per day. They are seen in such far flung places as Israel, Brazil, Arabia and Africa—and in cities such as New York and Chicago, Ft. Knox, Ky., and Allentown, Pa.

In addition, this company also manufactures suburban type buses and U. S. Army Cargo Trailers, including most of the parts for them (stampings, frames, and so on).

Taxicabs are finished in a conveyorized system installed by Jensen Specialties, Inc. Following conventional cleaning and phosphatizing procedures and a baked prime coat, several different colors are applied to give the desired design. Colors applied run the entire range of the spectrum. Because the company must meet color specifications for different designs for each order, a wider variety of colors are applied here than in the average automobile factory. Masking operations are also unique, in that different designs must be applied for each taxicab or bus company. Since so many colors are used, a large number of ovens is needed to bake each color after it is applied. A total of nine Jensen Pan-L-Heat Ovens is used for the finishing operations. They perform the following functions: dry-off after phosphate coating; prime bake; first color coat bake; second color coat bake; third color coat bake; prime bake of parts finished separately; first color coat bake of parts; checker trim bake; and second color coat bake of parts.

For maximum safety all these ovens are interlocked into one cut-off system. When the spray booth exhaust fan stops, everything stops, including the ovens and conveyors.

Buses are built for big users like the City of Detroit. Five per day are turned out on a highly mechanized produc-

Fig. 1—Checker cabs are shown emerging from one of the nine infra-red lamp-heated ovens.

DOW SODIUM ORTHOSILICATE

Improved recessed-head lever-lock grips tighter, yet opens and closes more easily; full open-head makes *all* contents readily and quickly accessible.

exclusive, improved all-steel drum with full open-head and sturdy lever-lock brings you new shipping, handling and storage advantages

The completely new Dow Sodium Orthosilicate "package" makes an even *better* buy of this *preferred* heavy-duty cleaning compound. Exclusively Dow's, the all-steel drum now available ships better, handles easier, saves you valuable storage space.

Notice the improved swedged-in head design, and the recessed-head lever-lock. These features reduce the chances of drum damage in shipping or storage. A tighter seal is obtained, along with full accessibility to the last scoopful of Sodium Orthosilicate.

This sturdy drum is the ideal container where storage is damp or heavily moist. And don't overlook its salvage value.

You can get Sodium Orthosilicate in the new drum from Dow plants and distributors. Add its advantages to these *recognized* benefits of Dow Sodium Orthosilicate: uniform high quality and dependably prompt delivery. Result: more good reasons for placing your order with Dow. THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on DOW CHEMICALS DOW

For more data circle 169 on Reader Service Card

tion line. The three bus processing ovens are each 196 kw and 15 feet long. Prime and finish coat are applied as follows: after the prime coat has been sprayed on, the bus is wheeled into baking position on a dolly. Then, by a push button control, the end bank of lamps is manuevered into position on an overhead trolley. The lights are turned on and remain on for 12 minutes; they are turned off automatically by a timing device. Then a movable oven, motor-driven at a fixed speed, moves over the length of the body, baking the tops and sides. The second bank of lamps, after passing the end of the oven, is moved into position at the opposite end of the bus. The cycle takes 25 minutes.

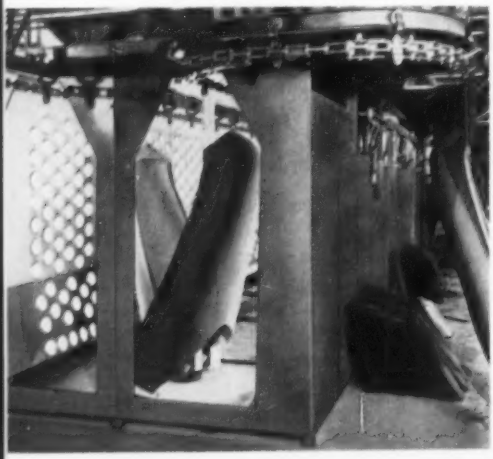


Fig. 2—An overhead conveyor carries taxicab hood through a double pass baking oven.

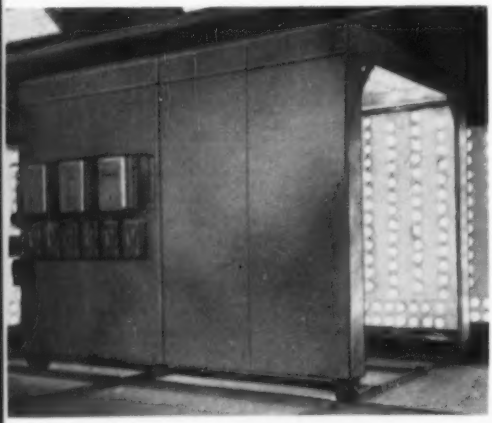


Fig. 3—Oven used in baking finishes on huge buses. (Photographs courtesy Jensen Specialties, Incorporated, Detroit 28, Michigan)

The bus is transferred to another line. Here it passes through the first color spray booth, the second oven, and the second color booth. A third oven completes the finishing operation.

Cargo trailers are also built by this company. All cargo trailers are finished in standard olive drab. Two coats are applied; baking time is ten minutes for each coat.

For more data circle **40** on Reader Service Card

★ ★ ★

Effect of Basis Metal Condition on Plating. A.E.S. Research Report Serial No. 30. By A. E. R. Westman and F. A. Mohrnheim. Published by the American Electroplaters' Society, 445 Broad St., Newark 2, N. J. Price, $1.10.

The report contains two sections, the first of which is devoted to a description of an improved method of taper sectioning, which enables it to become a routine operation. It is entitled "Effect of Basis Metal Condition on Plating." The origin of the "palisade layer" observed in certain taper sections is established as the result of controlled etching experiments and an investigation of the flatness of taper sections by interferometry. A study, by taper sectioning, of the surface effects produced in low and high carbon steels by blasting with various abrasives is also described.

The second section of the report is entitled "The Influence of Physical Metallurgy and Mechanical Processing of the Basis Metal on Electroplating." It contains bibliography, correlated abstracts, and a critical review of the literature related to this subject.

5 POINTS FOR FLAWLESS GALVANIZING

PROMAT PRE-GALV

● If you galvanize, here are five points by which you can judge your work. If your present process does *not* include complete control over these factors, they can become five good reasons why it will pay you to write for details on the PRE-GALV system:

METAL-PREPARATION — Pre-Galv acid additive provides controlled etching without danger of over pickling . . . an oxide free surface when work enters the flux.

FLUXING—Pre-Galv flux gives maximum adherence . . . *uniform* alloying of zinc to the basis metal.

CONTROLLED DROSS FORMATION—Dross is kept to a minimum in the Pre-Galv process.

UNIFORMITY OF ALLOY LAYER—Adhesion of the zinc and ductility of work processed with Pre-Galv system is superior to that of any known system because of extent and uniformity of the alloy layer produced.

BRILLIANT, CORROSION RESISTANT COATING—Uniform flow out of metal, evenness of alloy layer insures unusual brilliance *plus* top protection for finished work.

● One of a complete line of Promat protective products that are backed by extensive research and responsible service, the Pre-Galv system is easy to use and requires no additional equipment for use. Write for bulletin G1-F today.

PROMAT *Division*

Poor & Company

851 S. Market Street

Waukegan, Illinois

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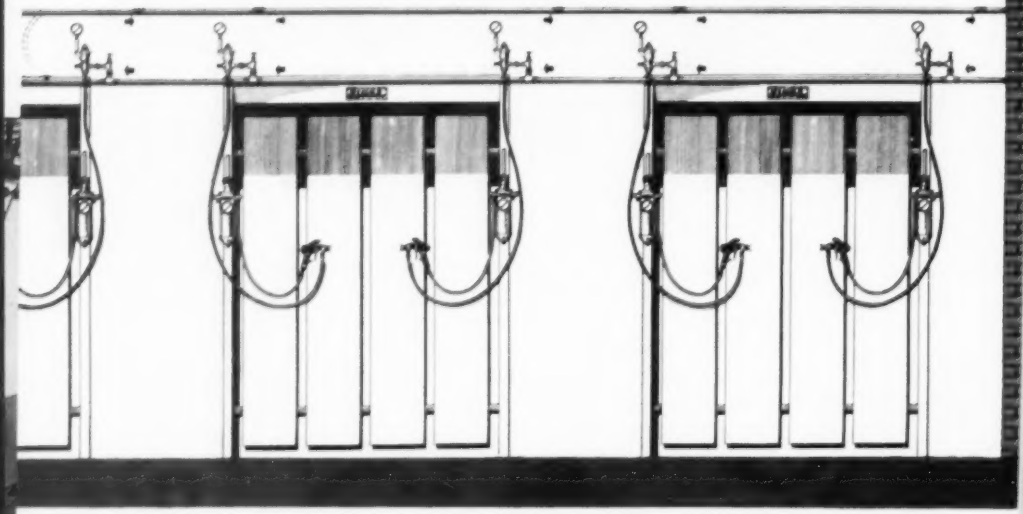
Pump paint through a mile of pipe...



Binks new air-operated material handling pumps open the way to paint circulating systems for every size plant

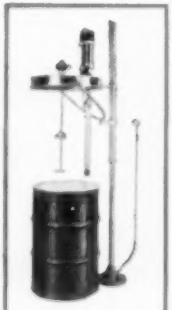
In a system of this kind, paint is circulated under pressure past each spray station and back to the drum. Binks new material handling pumps are ideal for this purpose. They can force paints of average spraying viscosity through a mile of suitable piping, *direct from the original drum* or from mixing tanks.

Now you can centralize all material handling, paint mixing, and viscosity control in one spot, with these major advantages: Color matching of component parts is easy. No time is required to transport paints to the spray stations or to clean and fill pressure tanks. Spillage and paint contamination are eliminated.

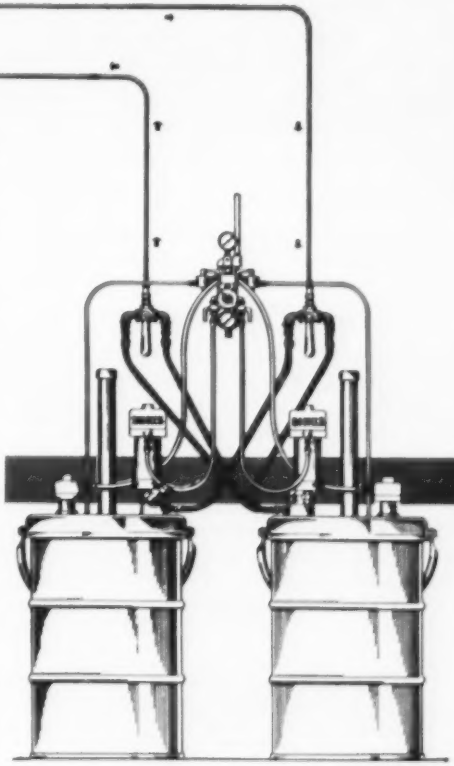
The above diagram shows a two-pump-per-color system. One pump supplies paint to the spray guns while the other is raised to allow replacement of the empty drum...or is agitating the paint prior to pumping. A valve switches the flow from one pump to the other. Not a moment's production is lost.

Binks air-operated pump elevator speeds up drum changing

This new Model 41-9000 air-operated pump elevator pays for itself many times over in the time and labor it saves. It quickly lifts the entire pump assembly clear of a 55-gallon drum and holds it there while drums are changed.



...supply any number of spray guns



Here are some of the new features which make Binks pumps your best buy:

Power-plus: These new pumps will feed paint to any number of spray guns.

Delivers more: Pumps paint on both up and down stroke. Have longer stroke for greater volume.

Low maintenance: Ruggedly built to stand up under hard, continuous operation. Dust and dirt can't enter the new Auto-Cycle air valve. Fluids cannot work up into the motor. No lubrication required.

Uses less air: Large ports minimize back pressure. Precision manufacture reduces friction.

Send today for your copy of Binks Bulletin 701 which describes the many advantages and economies of a paint circulating system using Binks Material Handling Pumps. Binks engineers will be glad to help you select and install the right equipment. Write to the address below:

149-55

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EVERYTHING FOR SPRAY PAINTING

GUNS

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Binks Manufacturing Company
3118-40 Carroll Ave., Chicago 12, Illinois

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New Equipment, Materials, Processes

› Cleaning
› Polishing
› Plating
› Finishing

Small Parts Dryer

Model 20 Kreider Double-action Centrifugal Dryer for small parts has been announced by the New Holland Machine Co., New Holland, Pa.

Capacity of this unit is up to 75 pounds of small parts.

The exhaust system allows moist air to pass out of the dryer, rather than be blocked in the bottom of the machine, improving speed of drying, it is stated.

Air is sucked down over the spinning basket by the turbine at the base of the spinner. Still faster drying is possible by heating this air with optional electric or steam heating units that fit compactly into the cover of the dryer. The large electric Chromalox 2350 Watt element can heat the air to 160 deg. F.

High speed 825 r.p.m.-whirling action gives basic drying power to the Kreider Dryer.

Safety features on the dryer include an interlock that prevents the possibility of the operator opening the cover without using the foot brake to stop the machine. The dryer can not be started with the cover open.

A magnetic starter with a reset button prevents the possibility of overload and damage to the machine.

For more data circle 1 on Reader Service Card

The Model 20 Kreider Centrifugal Dryer

★ ★ ★

Brightener for Cyanide Cadmium Plating

Cadmax, a highly concentrated liquid brightener for barrel and still cyanide cadmium plating, has been announced by Federated Metals Div., American Smelting and Refining Co., 120 Broadway, New York 5, N. Y. Cadmax is said to contain pure chemical compounds of known structure,

eliminating breakdown products and organic impurities.

According to the manufacturer, Cadmax will produce clear, brilliant, blue white deposits over an extremely wide range. Other features claimed for Cadmax are: burning is prevented even with low cadmium metal content in the bath; permits the use of high throwing power baths without restricting the plating range; and, good results are produced in low nickel content baths.

For more data circle **2** on Reader Service Card

★ ★ ★

Polishing Wheel

A device for polishing metal, called the "PG" wheel, has been developed by Minnesota Mining and Manufacturing Co., 900 Fauquier St., St. Paul, Minn. It consists of hundreds of pieces of cloth coated abrasives factory-formed into a wheel that can be used on rotary or straight line automatics, or on standard lathes for hand operations.

The wheel is unusual in that it removes stock as part of its polishing action. This abrading-polishing action and the wheel's ability to conform enable it to remove mild draw marks in the same process in which it generates a buff-type finish, it is stated.

At a metal manufacturing plant where the product is polished and buffed prior to plating, "PG" wheels in a 220-240-320 grit sequence are producing an average of 11,000 pieces before needing replacement. On a straight line automatic machine, 13 heads with "PG" wheels are now in operation, and are producing between 4,000 and 4,500 pieces per day. The finish produced by the wheels is equal to 4½ micro inches.

One of the outstanding features of the "PG" wheel, the manufacturer states, is that its rate of cut and the micro inch finish it produces remain constant from the beginning of a wheel until it is worn down to the hub. It is not necessary to increase arbor speed to maintain cut during the wheel's life.

Some of the other advantages of the wheel include: cleaner operation, since oil instead of compound is used; wheel remains sharp throughout its life because fresh mineral grain is exposed as the wheel wears; the wheel is adapt-

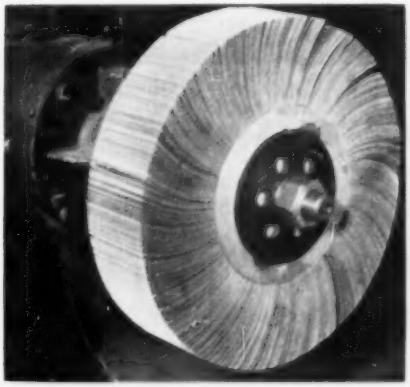


Fig. 1—A "PG" wheel ready for use on a lathe spindle. The wheel is adaptable to hand or full automatic operations. It consists of hundreds of pieces of cloth coated abrasives.

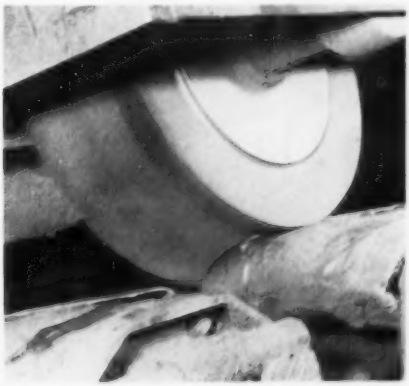


Fig. 2—This "PG" wheel is installed on a straight line automatic machine. The wheel quickly takes shape of part being finished, and retains shape throughout life of the wheel.

able to hand or automatic operations; and it will take the shape of the part being polished, and the shape will remain constant during the life of the wheel.

Lubrication—of the type presently used with some buffing and intermediate finishing operations—also helps develop better "PG" wheel finishes and longer wheel life.

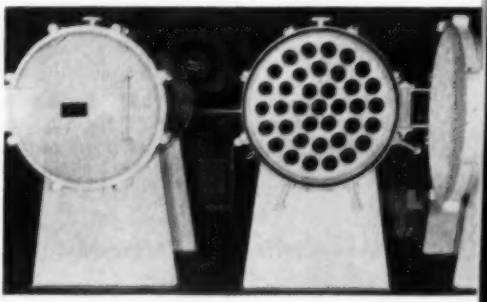
"PG" wheels are available in 20 stock sizes, with diameters ranging from 14 to 17 inches, in 2, 3, 4, 5, and 6 inch widths. The wheels are being made with two types of mineral coatings—aluminum oxide and silicon carbide—in the full range of polishing grits.

Wheels are mounted on a hub assembly which can be adapted to fit any spindle.

For more data circle 3 on Reader Service Card

Tubular Filter

Industrial Filter and Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill., has announced a Tubular Filter designed



Industrial Tubular Filters are useful as smaller capacity filters for corrosive materials.

for simplified operation where a smaller capacity filter is needed. In operation, the fluid moves through the inside

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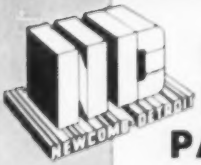

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For more data circle 172 on Reader Service Card

NEW . . . from Wyandotte

Expray-AP

An all-purpose, rust-inhibiting metal cleaner for spray washers

Here's a new alkaline spray cleaner that fills a definite need in metal cleaning. Not just an improved version of cleaners already on the market, Wyandotte's EXPRAY-AP is unique . . . research-developed, proved in use. Here are some typical spray-cleaning applications:

Steel parts — EXPRAY-AP is excellent for removing fabricating soils and preventing rust — even cold in a one-stage washer.

Zinc die castings — EXPRAY-AP is nonetching and provides protection against staining.

Cast-iron parts — EXPRAY-AP removes chips and dust, prevents rust on machined surfaces.

Glass — EXPRAY-AP eliminates streaking, removes pitch, rouge, and oils from lenses and other glass products.

If you're looking for ways to improve your metal-cleaning or finishing operations, call in your Wyandotte representative. Let him show you what EXPRAY-AP can do in *your* plant. Or clip and mail coupon today! *Wyandotte Chemicals Corporation, Wyandotte, Mich. Also Los Nietos, California. Offices in principal cities.*

EXPRAY-AP gives you all these benefits — *and more!*

Powerful cleaning action — contains free-rinsing synthetic detergents!

Easy to use — noncaustic, nondusty, free-flowing!

Low-foaming — even at high concentrations and in high-pressure washers!

Prevents scale — even in hardest water!

Prevents rust — contains its own rust inhibitor!

Economical — lower use-cost and reduced equipment maintenance!

Wyandotte CHEMICALS

J. B. FORD DIVISION

WYANDOTTE CHEMICALS CORP.
Wyandotte, Michigan

Please send me further information and technical data on EXPRAY-AP.

Name

Company

Address

City Zone State

For more data circle 173 on Reader Service Card

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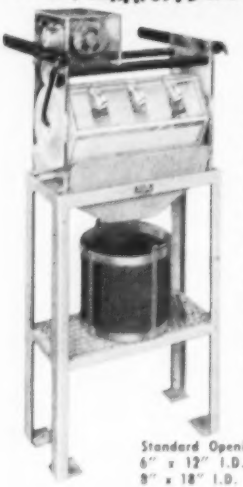
Soon to be *Announced*

NEW STUTZ BELT DRIVEN Production Plating Barrel

with special features.....



STUTZ

Portable Plating Barrels

- The Stutz Portable Barrel is made in 2 standard sizes with cylinders having inside dimensions of 6" x 12" and 8" x 18", I. D., and smaller upon application. Standard openings are 3/32". Smaller or larger openings can be furnished as required.
- Baskets in perforated metals or wire mesh.
- Load/Unload Stand for convenient and fast handling of work loads.

MADE IN TWO STANDARD SIZES

Standard Opening	3/32"
6" x 12" I.D.	$186.50
8" x 18" I.D.	$295.00
Stand	$ 39.50
Perforated metal	$ 9.15
Wire mesh	$ 6.15

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For more data circle 174 on Reader Service Card

tube of the filter and passes out the perforated wall through filter paper. The filter is cleaned by removing the used liner, rolling flat sheets of clean filter paper and inserting them in the tube.

These tubular filters are reported to be particularly effective in filtering corrosive or non-corrosive liquids with a low percentage of solids; as a trap filter connected to other filters for removing fine particles not removed by the other filter; and for filtering the run-off when cleaning or servicing larger filters.

Advantageous features include easy replacement of liners; removal of solids in dry form, if desired; a chamber which can be emptied without losing the cake; absence of unfiltered heel; and the ability to filter with or without a pre-coat.

Several sizes of the Industrial Tubular Filter are available, with from one to 36 tubes and 2.4 to 86.4 square feet of filtration area. They can be ordered in a wide range of materials, and can be lined for corrosion resistance.

For more data circle 4 on Reader Service Card

★ ★ ★

Phosphate Coating

An iron phosphate, capable of producing a coating weight up to 175 milligrams per square foot, is available through Detrex Corporation, Box 501, Detroit 32, Michigan.

This product, which is known as 79B, can be used successfully in either three- or four-stage processing units, the manufacturer states.

Detrex 79B contains a detergent which permits its use as a dual purpose product for both cleaning and coating in a three-stage unit; yet will permit the use of a precleaner for removal of more tenacious soils.

For more data circle 5 on Reader Service Card

look ma, one hand

literally "LIQUID ENVELOPE"

the original, firesafe, strippable
SPRAY-BOOTH COATING

peels off spray-booths that easily!

A gag? No, a fact! It's easy to *peel* booths *clean* with "Liquid Envelope." Spray on. When overspray accumulates, peel off and re-coat. Takes only minutes. Saves labor. Promotes firesafety. "Liquid Envelope" film will not burn or support combustion. Improves illumination, too. In use from coast-to-coast for over 10 years. Try it. Order a 5-gallon test sample at drum-lot price from your nearest distributor.

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For more data circle 175 on Reader Service Card

Laboratory Model Demineralizer

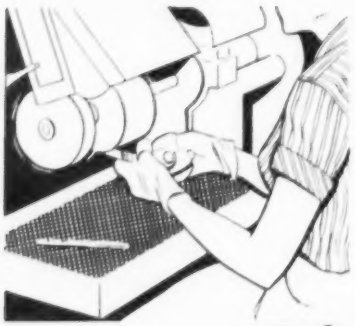
A research model demineralizer or ion-exchange kit has been announced by the Barnstead Still & Sterilizer Company, 12 Lanesville Terrace, Forest Hills, Boston 31, Mass. Model RE-1 Research Demineralizer has been developed to provide a laboratory with all of the basic material and reference data needed to explore the properties of twelve of the newest cation and anion resins in both highly basic and weakly basic types.

Research Model Demineralizer Kit

The complete unit consists of two transparent Lucite ion-exchange columns, twelve jars of resins of assorted types, five cation and seven anion, and a manual of more than 100 pages of technical data on the resins. Instructions for operating as a mixed-bed or a two-bed ion-exchanger are included and additional units can be connected in series for multiple-bed experiments.

This new ion-exchange kit can be used for research or as a demonstra-

PROTECT FINE PLATED SURFACES



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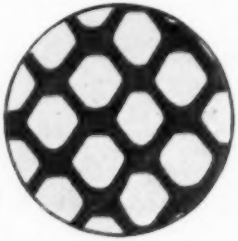
Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP *Neotex*



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Dept. 76, Madison 10, Wis.

For more data circle 176 on Reader Service Card

Using 5 Sly Cabinet Ovens for stress relief of armature shafts, well-known electrical equipment manufacturer experiences uniform oven temperature in closely controlled experimental work.

CLOSE CONTROL OF PROCESSING

with compact, portable SLY OVENS

Sly Cabinet Ovens give accurate temperature control for all laboratory and production baking, drying and dehydrating. Compact, portable, rugged, they are surprisingly inexpensive.

MANY FEATURES: Uniform work chamber temperature assured by use of high-pressure blower — no radiant heat. Double-gasketed doors with effective heat trap. High volume adjustable air flow. High and low heat switch for close control, quick recovery. LEONEL-sheathed lifetime heating elements. And many more.

COMPLETELY ASSEMBLED: Sly Cabinet Ovens are thoroughly tested, then shipped as complete units, including all wiring. Just connect the power lines for immediate operation.

Available in electric (as illustrated) or gas-fired. *Write for Heavy-Duty Cabinet Ovens Bulletin.*

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For more data circle 177 on Reader Service Card

tion unit, and should prove an effective teaching or instruction aid. It permits experiments on a small scale so that results are quickly available.

For more data circle **6** on Reader Service Card

★ ★ ★

Barrel Finishing Abrasives

Two barrel finishing media have been placed on the market by Norton Company, Worcester 6, Mass. The first, known as Tumblex "T," consists of Alundum vitrified bonded triangular shaped abrasive. This was developed to overcome the problem of the wedging of abrasive in parts being tumbled. The second media, Tumblex "N," is a natural material. This is being used with good results in finishing dies without cutting through the outside protective layer of the casting, exposing the porous structure beneath.

These are the reported specific advantages of the new Tumblex "T" molded shapes:

1. Uniform size and shape to prevent wedging.
2. Faster cut with no cutting compound required.
3. Maximum surface contact between abrasive and parts being processed.
4. Light weight per cubic foot, requiring less weight to fill barrel and avoiding roll in or roll over of edges of parts.
5. Wears away evenly, does not chip or fracture, thereby eliminating the presence of small chips to lodge in holes.
6. Maintains shape. Triangular shape is maintained. Wears so that abrasive shapes can be resized for applications requiring the next smaller size.
7. Chemically inert, not affected by acids, compounds or detergents.

ELIMINATE COSTLY REJECTS IN YOUR FINISHING DEPT. WITH DETROIT "TAC" RAGS
DETROIT HANDY "TAC" RAG
PICKS UP DUST LIKE A MAGNET
DETROIT "TAC" RAGS are an absolute necessity for cleaning any metal, wood or plastic surface before painting. Removes all dust, lint and sanding particles.
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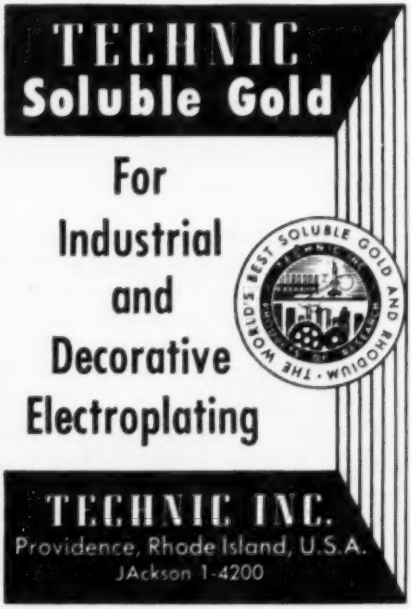

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POLISHING and BUFFING • DE-BURRING
WIRE BRUSHING and MICRO-FINISHING

● Proved performance and dependability in industry for half a century

RECOMMENDATIONS and QUOTATIONS

● *We will be pleased to receive blue prints or preferably finished and unfinished samples of the part you contemplate finishing together with detailed information on present finishing operation and production requirements. On receipt of samples and data we will offer recommendations and quotations.*

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ROTARY STRAIGHT LINE SEMI-AUTOMATIC AND SPECIAL *Polishing and Buffing* Machinery

ACME Manufacturing Co.

1400 E. 9 MILE RD., DETROIT 20 (Ferndale) MICH.

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

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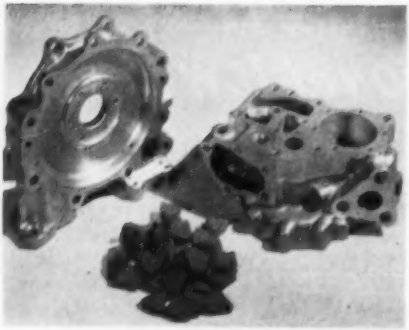

Parts such as these can be tumbled in Norton Tumblex "T" abrasive without wedging.

Tumblex "T" is available in four sizes 4, 3, 2 and 1, (⅜, ⅝, ⅞, and 1⅛ inches measured on the side of the triangle and ranging in width from 3/16 to 5/16 inch). Weight per cubic foot of the new molded shape is 85 pounds.

Because it cuts slower and has little breakdown, Tumblex "N" does not mar the surface of die castings. It also brings up a bright color and luster. This natural stone also brings up a good color on steel parts as well as zinc, brass, aluminum and stainless steel.

Tumblex "N" is often used with small amounts of loose abrasive where additional cutting action is required. The loose abrasive can be flushed out of the barrel and Tumblex "N" used alone for finishing. It is available in seven standard sizes ranging from 3/16 to ⅜ inch through 1⅝ to 2½ inches.

For more data circle **7** on Reader Service Card

★ ★ ★

Electrocleaner

Diversey No. 12, a reverse current electro-cleaner for steel, copper and

Dry Finishes More Uniformly-Fast in ROCKWELL OVENS

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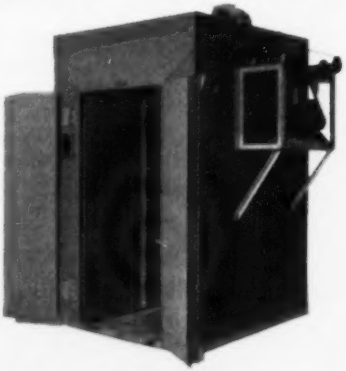
18 truck- or rack-loading sizes and 6 bench and cabinet sizes to meet most of your heating needs. Also special batch and conveyor ovens of all types. Write for Bulletins.



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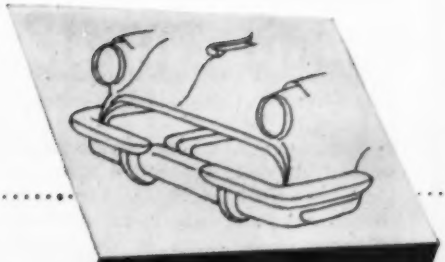

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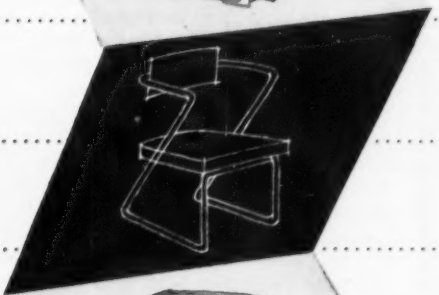
electroplating
CHEMICALS
and
ANODES



nickel plating

. . still and barrel . . nickel anodes—all commercial grades and sizes . . anode bags . . single nickel salts—nickel chloride . . nickel carbonate . . nickel fluoborate . . boric acid

chromium plating

. . . pure "Krome Flake" 99.8% CrO_3 . . sulphates less than .10% . . . lead, tin-lead and antimony-lead anodes.

copper plating

. . . copper ball anodes . . . Rochelle Salts . . . sodium and copper cyanides . . . copper sulfate . . . copper fluoborate

cadmium plating

. . . ball and cast cadmium anodes . . . cadmium oxide . . . sodium cyanide . . . cadmium fluoborate.

tin plating

. . . cast tin anodes . . . sodium stannate . . . stannous sulfate . . . tin fluoborate . . . acid tin addition agent.

zinc plating

. . . ball and cast zinc anodes . . . sodium and zinc cyanide . . . zinc sulfate . . . zinc fluoborate.

lead plating

. . . cast lead anodes . . . lead fluoborate.

silver plating

. . . silver cyanide.

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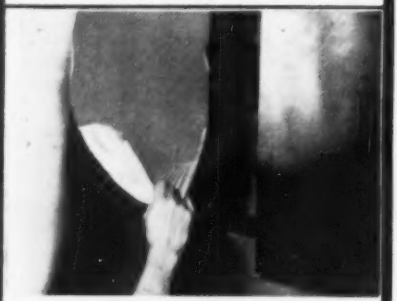
For more data circle **182** on Reader Service Card

Clean spray booths in a *FLASH* with BOOTHGUARD



SPRAY IT ON—in minutes
STRIP IT OFF—overspray goes with it

Only BOOTHGUARD
WATER-TYPE Coating is . . .

NON-INFLAMMABLE IN STORAGE!
Just as fire safe in its liquid state as it is when dry! No insurance risk — no special storage areas needed.

COVERS COMPLETELY WITH ONLY 1 COAT!
Costs less . . . and you use less. There is no feathering or webbing — less waste. One coat covers entire booth, dries fast and clings tight until you remove it.

STRONGEST COATING MADE!
BOOTHGUARD'S tough, elastic coating will not tear or shred when stripped. Pull it off — all at once.

WHITEST COATING!
BOOTHGUARD gives greater reflection, better visibility — and you use less. You'll have fewer rejects with BOOTHGUARD coating your booths.

See for yourself what BOOTHGUARD and METALGUARD can do for you.

SPECIAL INTRODUCTORY OFFER — 10% OFF 5 GALLON PRICE!

Distributors! Some territories still available! SEND FOR FURTHER INFORMATION

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For more data circle **183** on Reader Service Card

copper alloys has been announced by The Diversey Corp., 1820 Roscoe St., Chicago 13, Illinois.

This cleaner is said to remove all unwanted deposits safely, at the same time preventing recontamination, and conditioning the base metal for better adhesion of the plate. It also features water softeners, for scale prevention; a limited foam blanket which helps prevent hydrogen explosions; and formulation to allow its use with direct as well as reverse current. Since operating conditions are not critical, this material may be used with automatic, semi-automatic or manual equipment.

For more data circle **8** on Reader Service Card

★ ★ ★

Fume Arrester

A patented vertical rotor type fume arrester has been designed for the chemical industry by Schmieg Industries, Inc., 23930 Sherwood, Center Line, Mich., manufacturers of industrial ovens, spray booths, finishing systems, and equipment for the removal of dust and fumes.

For protection against corrosive fumes, this unit is rubber-lined on all inner surfaces except the stainless steel rotor. It is complete with metering type water level control manifold; utility manifold; observation portlights; service and access doors. For compactness, the exhaust fan is built into the top of the unit and is complete with V-belt drive, guard and motor mount. The contaminants are removed from the air stream as they are met by a heavy blanket of water thrown off tangentially from the independently driven screw rotor, drawing water from a reservoir.

These units are built in varying sizes, designed for specific operations.

For more data circle **9** on Reader Service Card

Sturdy, Space-saving VS-3 HONITE Barrel Finishing Machine

More Convenient . . . Easier to Maintain . . . Lower Cost

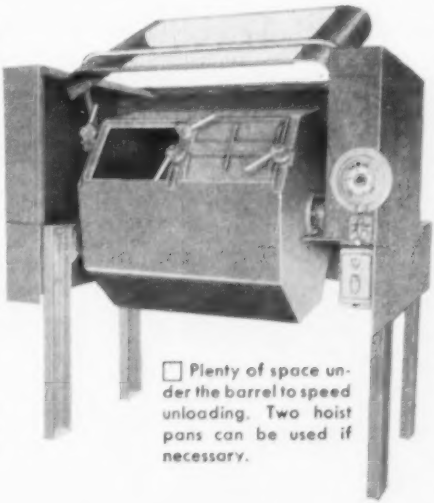
Here's the newest addition to the HONITE line of barrel finishing machines! More convenient . . . easier to maintain . . . lower cost, yet it retains *all* of the same precision construction features of established DV-3 and DV-5 models. It's designed with your needs in mind. It meets the most rigid safety requirements. With the all-new HONITE Barrel Finishing Machine, you have a choice of three motors; the 1½ h.p., for normal applications, the 2 h.p. for all but the heaviest jobs, the rugged 3 h.p. for super heavy-duty requirements. Note that the motor, speed reducer, speed changer and magnetic brake are mounted as a single compact unit, located well away from water and dirt, and completely protected from accidental damage by hoist pans, hoists and swinging objects.

☐ Pivoted safety gate —no slides or rollers to stick or jam.

☐ Cylinder can be removed from the front without disassembly.

☐ Oversize pillow blocks and self-aligning bearings carry full loads of steel burnishing media.

☐ Steel frame absorbs drive stresses without transmitting shock to supports.



☐ Plenty of space under the barrel to speed unloading. Two hoist pans can be used if necessary.

☐ All lubrication points are open and accessible.

☐ Handy height controls, switches and speed changer located at right side of barrel. No stooping — no stretching.

☐ Chain guard covers drive even when safety gate is raised.

☐ Shafts are jig-bored for cylinder mounting to insure alignment on axles within .005".

WANT MORE INFORMATION? Write Minnesota Mining and Mfg. Co., Dept. FI-115, St. Paul 6, Minn., for full details about the new HONITE Barrel Finishing Machine.

Made in U.S.A. by Minnesota Mining and Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: P.O. Box 757, London, Ont. Export: 99 Park Ave., New York City. Makers of "Scotch" Pressure-Sensitive Tapes, "Scotch" Brand Magnetic Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing.

Honite BRAND

For more data circle 184 on Reader Service Card

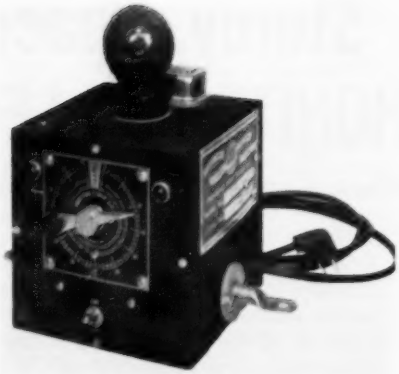
It's New

Plating Timer

Improved models of the Techni Timer for precision timing of short cycle precious metal electroplating have been announced by Technic, Inc., Providence, R. I.

Techni Timer does its precision work without interruption of current. It starts timing automatically when work contact is made, and automatically resets itself when work contact is broken, requiring no manual effort after the required time cycle is set. Expiration of the pre-determined time cycle is signalled by red light and buzzer.

Custom models of the Techni Timer are designed to meet any special requirements for short cycle precious metal electroplating. Standard Techni Timers immediately available from stock include 0-1 minute models with amperage load 8-45 or 18-100; 0-3 minute models with amperage load 8-40 or 18-100; and 0-5 minute models with amperage load 8-40 or 18-100.



Automatic Timer for precious metal plating

For more data circle **10** on Reader Service Card

Another fine product made finer . . .

with the PARAMOUNT "Finishing Touch"

"In jewelry merchandising, fine finishes are all important in catching customers' eyes," reports Shields, Inc., world-famous manufacturer of fine men's jewelry. "We have found that Paramount Felt Wheels can economically produce finishes which meet our standards — *and the customers'*."

Take a tip from Shields, Inc., — make sure the finish on your product is *creating* sales . . . not losing them. Discover how Paramount Felt Wheels can give you better finishes, faster and at less cost. Write, wire or phone today.

Paramount
Felt Wheels,
Bobs, Sheet Felt

Bacon Felt Co.
447 West Water St., Taunton, Mass.

For more data circle **185** on Reader Service Card

It's New

The FINISHING INDUSTRY'S only complete directory

OUTSTANDING . . .

in Editorial Features

in Circulation

in Advertising Value

19,000

circulation (guaranteed) among users of painted and plated finishes

- More Circulation in the plating field
- More Circulation in the painting field
- At Less Cost Per Thousand circulation than any other metal finishing publication, regular or directory issue!

Expose your advertising to the industry's most influential buyers in a media that enjoys year 'round use . . . PRODUCTS FINISHING Directory.

Advertising rates are based on space run in the regular issues of PRODUCTS FINISHING. The Directory can be used individually or in combination with monthly issues to earn the four, seven or thirteen time rate.

Complete details are available in a new brochure ready now.

Write for your copy today or contact your PRODUCTS FINISHING representative.

Single source reference to:

- Alphabetical Listing of Products and Processes
- Listing of Manufacturers Alphabetically by Product
- Names and Addresses of Manufacturers of Finishing Equipment and Processes
- Product Literature

products finishing directory

Gardner Publications, Inc.
—also publishers of Products Finishing and Modern Machine Shop
431 Main Street
Cincinnati 2, Ohio

Zinc Chromate Stripper

Oakite Stripper No. 110, designed to remove zinc chromate primers from aluminum without affecting the metal surface, has been introduced by Oakite Products, Inc., 20 Rector St., New York, N. Y., manufacturer of industrial cleaning and metal treating materials.

A two-phase solvent material, Oakite Stripper No. 110 is used full strength. The part to be stripped is immersed completely in the solvent, under the surface oil seal, which should be maintained continuously. According to the manufacturer, the material will remove zinc chromate primers and other finishes from aluminum with complete safety when used as recommended. Oakite Stripper No. 110 has a flash point of 290 deg. F., and does its job faster when heated to 140 to 180 deg. F. A pressure water rinse, warm or cold, is recommended to remove loosened paint.

For more data circle 11 on Reader Service Card

★ ★ ★

Polishing Wheels

Merit Products, Inc., 4023 Irving Pl., Culver City, Calif., has announced

Using a Grind-O-Flex Wheel

the production of 10 and 12-inch diameter wheels in one or two-inch widths. The larger wheels are designed for light grinding, burr shagging, and polishing of flat or contoured surfaces; they are light for their size, and may be used on light equipment or in automatic set-ups.

Available in a full range of grits, from 40 to 320, these wheels may be used in operations ranging from smoothing off flash to high polish operations. By choosing the proper grit for the job, the required finish or light stock removal may be accomplished without digging into the part. According to the manufacturer, they carry their own grit load and never require regritting.

Grind-O-Flex wheels are provided with flanges to fit any threaded spindle. They may be mounted on grinders, buffers, motor shafts, polishing jacks or automatics.

For more data circle 12 on Reader Service Card

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.

Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.

Write (Dep't. P) on your letterhead for catalog and price list.

DIXON & RIPPEL, INC. KINGSTON, N. Y.
ESTABLISHED 1856

For more data circle 187 on Reader Service Card

Hi! BURNT UP

about TUMBLING CHIP COSTS?

If So — Let Us — Help You

Don't be Misled-
we own Our Own Quarry!

CHIP SIZES LIMESTONE & GRANITE

Chip Size	Pass Thru	Stay on Top
No. 1	1 3/4" Screen	1 1/4" Screen
No. 1A	1 3/4" Screen	1 1/2" Screen
No. 1B	1 1/2" Screen	1 1/4" Screen
No. 2	1 1/4" Screen	7/8" Screen
No. 2A	1 1/4" Screen	1" Screen
No. 2B	1" Screen	7/8" Screen
No. 3	7/8" Screen	5/8" Screen
No. 3A	7/8" Screen	3/4" Screen
No. 3B	3/4" Screen	5/8" Screen
No. 4	5/8" Screen	5/16" Screen
No. 4A	5/8" Screen	1/2" Screen
No. 4B	1/2" Screen	5/16" Screen
No. 5	5/16" Screen	1/8" Screen
No. 5A	5/16" Screen	3/16" Screen
No. 5B	3/16" Screen	1/8" Screen
No. 6	1/8" Screen	3/32" Screen

The Original
PROCESSED LIMESTONE HONING CHIPS

PROCESSED RED GRANITE TUMBLING CHIPS

and we are the
ONLY SOURCE
that can supply you with this material

Contact Your Exclusive Distributor or us direct.

8¢ *PER POUND*
PACKED IN 100 LB. BAGS F.O.B. DETROIT, MICH.

Chip Samples and Sample Parts Processed Free

UNIVERSAL TUMBLING SUPPLY CO.

14337 MANSFIELD, DETROIT 27, MICHIGAN

Phones: VE 8-2071 • WO 1-9198

For more data circle 198 on Reader Service Card

Spray Lacquer

Zip-Spray Speed Lacquer

Zaco Laboratories, Division of Zip Abrasive Co., 1360 W. 9th St., Cleveland 13, Ohio, has announced the Zip-Spray Speed Lacquer, for identifying metal bars and other forms in warehouses and plants by applying color. The can is merely shaken and the color sprayed on.

According to the manufacturer, metal can be identified and coded according to temper, gauge, pickle, alloy, or any distinguishing characteristic by using different colors. Combinations can also be used by completely spraying on the first color, then masking off an area for the second.

This speed lacquer is available in one dozen different colors.

For more data circle 13 on Reader Service Card

★ ★ ★

Addition Agent for Chromium Bath

Wagner Brothers, Inc., 432 Midland Ave., Detroit 3, Mich., has announced a liquid addition agent called "Krome-On" which, according to the manufacturer, can materially increase the throwing power of chromium plating baths.

In addition to the advantage of increased plating efficiency, Krome-On furnishes a mist-inhibiting blanket to

★

IT'S NO MYSTERY

...WHY MORE AND MORE COMPANIES ARE USING ELECTRO-GLO ELECTROPOLISHING FOR BETTER METAL FINISHING

Electro-Glo electro-polishing concentrates mean savings to you in Time, Labor and Production Costs. Brightens, smooths and deburrs in one simple operation.

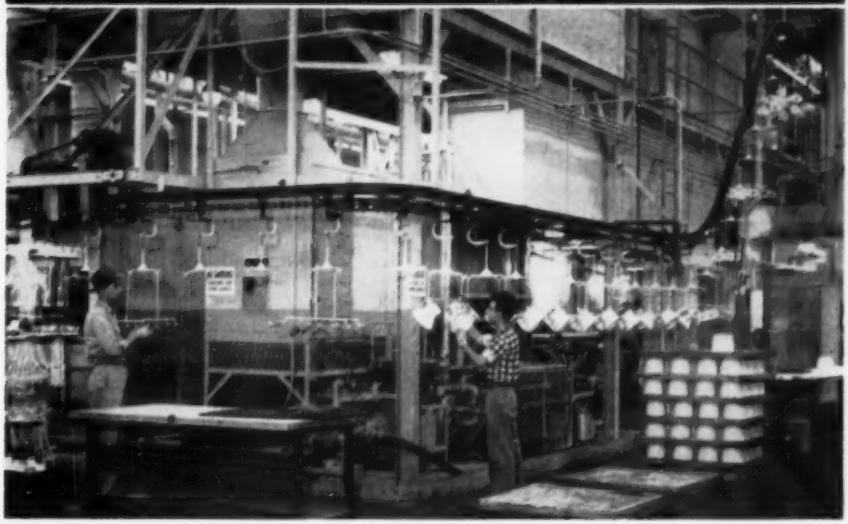
Copper Alloys ..... ELECTRO-GLO #200
Austenitic Stainless Steel ELECTRO-GLO #300
Martensitic Stainless Steel ELECTRO-GLO #400
Carbon Steel ..... FERRO-GLO #500

WRITE FOR DETAILS AND NEAREST DISTRIBUTOR

Electro-Glo COMPANY
1430 S. TALMAN AVE.
CHICAGO 8, ILLINOIS

For more data circle 189 on Reader Service Card

BETTER FINISHES AT LOWER COST -- THROUGH *Flow Coating by Koch*



"HEART OF PRODUCTION"

Automatic flow-coating, in our opinion, is inevitable in your plant on products now being dipped or sprayed. From a cost standpoint its advantages over these methods dictate your early study with qualified flow-coating experts.

KOCH designs, fabricates and installs flow-coating equipment for plants large and small, under a single responsibility contract that assures you of a peak-efficiency system at lowest cost. Get more facts now about "Flow-Coating by KOCH!"

WRITE FOR BULLETIN 331

GEORGE KOCH SONS, INC.

EVANSVILLE, INDIANA

For more data circle 190 on Reader Service Card

reduce spray and flue loss, thereby saving chromic acid waste. Reduced drag-out also minimizes waste disposal problems.

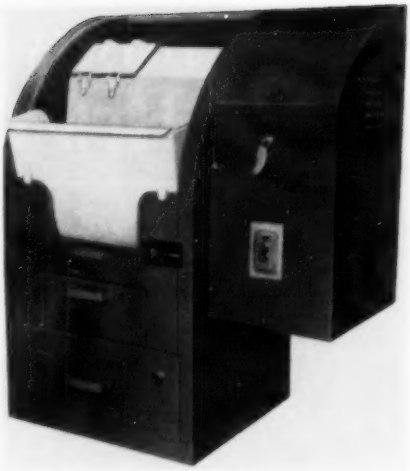
For more data circle **14** on Reader Service Card

★ ☆ ★

Barrel Finishing Unit

Speed-D-Burr Corp., 3613-C San Fernando Rd., Glendale 4, Calif., has announced the addition to their Mity-Mite line of the Space-Miser, a compact, completely self-contained barrel finishing department, all in one unit.

The Space-Miser can be installed in a very small area, since the actual floor space required is only 40 inches by 26 inches. The barrel is 20 inches long and 14 inches in diameter and is shaft-mounted on factory sealed, self-aligning, ball-bearing pillow blocks.



"Space-Miser" Barrel Finishing Unit

The unit is available in one- or two-compartment models with work load capacity of 1.9 cu. ft. and 0.95 cu. ft., respectively. Motor is a 1/3 h.p., 110 volt, single phase, variable speed.

A sump-settling drawer is provided in the unit with three equal settling compartments and with drain outlet to connect to existing drain facilities.

For more data circle **15** on Reader Service Card

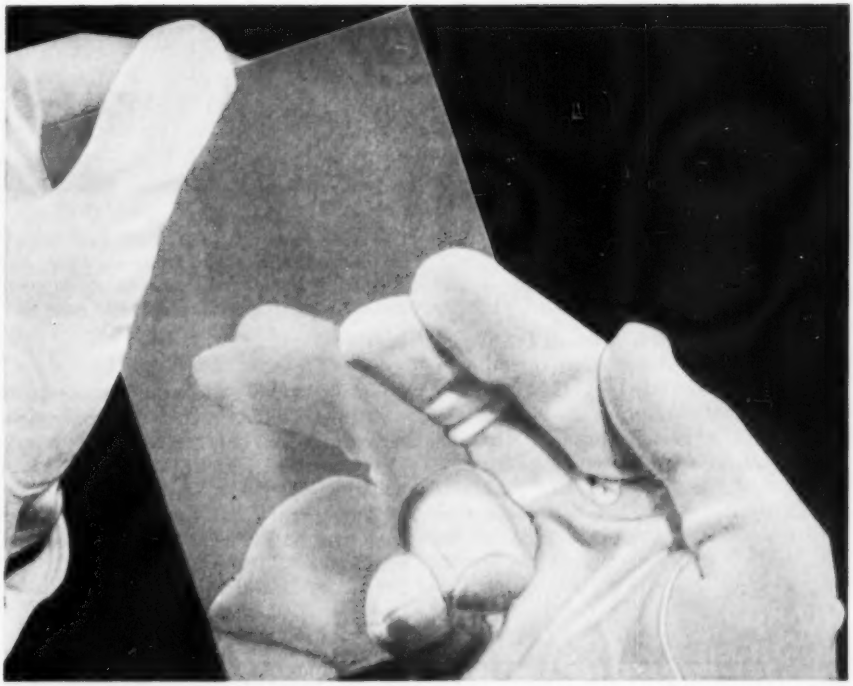
★ ★ ★

Strip Coating

Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J., has announced a strip coating formulation, "Liquid Envelope" No. 67-20, which can be used over air-dry enamel, lacquer and painted surfaces. This coating, based on a combination of resins and solvents, is freely strippable without lifting or damaging the underlying surface coating. It can be used indoors or outdoors and affords protection against scuffing, abrasion and the elements. "Liquid Envelope" No. 67-20 is

YOU can rely on
Randolph
for prompt shipment
in any quantity of
· FINISHES ·
Lacquers • Enamels
Dopes • Thinners
Clear Metal Finishes
Colored Lacquers
Clear S.G. for Metal
Texture Enamels
Specialized Production Finishes
Aircraft Finishes
RANDOLPH
PRODUCTS CO.
CARLSTADT, NEW JERSEY

For more data circle **191** on Reader Service Card



White glove test proves K-8 cleans deep—removes smut

SMUT KEEPS REJECTS HIGH in many plating shops. But the toughest impacted soils and smut are no match for new Pennsalt Electrocleaner K-8. Where other cleaners fail, K-8 gives consistently brilliant results—cuts rejects to the bone, eliminates costly extra buffing, prevents roughness and dulling of the plate.

Pennsalt Electrocleaner K-8 is a highly conductive alkaline detergent; it lets maximum current flow at economical voltages. Here is a new concept of *synergistic* surface-active agents that work equally well on steel or copper.

Call your nearest Pennsalt service man for an interesting demonstration of K-8. Or write about your toughest metal cleaning problem to Metal Processing Department, Pennsylvania Salt Manufacturing Company. EAST: Three Penn Center Plaza, Philadelphia 2, Pa.; WEST: Woolsey Building, 2168 Shattuck Avenue, Berkeley 4, California.

Pennsalt Chemicals

A BETTER START FOR YOUR FINISH

For more data circle 192 on Reader Service Card

regularly furnished in black or orange but other colors can be supplied. Working samples can be secured from the manufacturer.

For more data circle **16** on Reader Service Card

★ ★ ★

Poly-Amide Epoxy Finish

"Poly-Ep" Platon, a finish for application over metal has been introduced by Minnesota Platon Corporation, Pipestone, Minnesota.

This finish can be applied directly to any clean metal surface without a prime coat, has good adhesive qualities, and a hard surface, yet is flexible and will not crack or chip under impact or bending. It may be applied by brush, spray, applicator or dipping, according to the manufacturer.

One coat "Poly-Ep" Platon sprayed directly on aluminum sheet and foil, air dried. Foil crushed and sheet bent after finishing, without cracking, shows flexibility and adhesion.

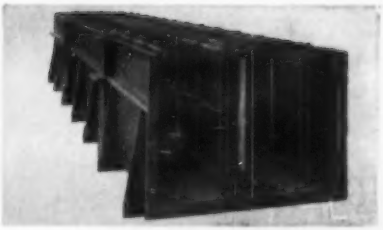
"Poly-Ep" Platon is a two component finish that is mixed in equal parts as required. When mixed it has a very low viscosity which is maintained in the container for several hours with little change. When applied, it air dries dust free in thirty minutes and can be handled in 120 minutes. Forced drying for thirty minutes at 130 deg. F. produces a hard surface.

WE'VE TAKEN THE
MYSTERY
OUT OF DRYING OVENS
WITH
driQuik
Infra-Red Interlocking Sections
Ovens Any Size or Shape
Whether your production problem involves heating, baking, dehydrating, degreasing or preheating, your own maintenance crew can erect the ovens you need inexpensively and quickly without special tools, or we can build them for you to your specifications. Positive temperature control at the touch of a dial.
NO BULBS OR SOCKETS TO BURN OUT
Sections use the exclusive driQuick lava-coated ceramic type infra-red generators which are immune to shock, vibration and moisture, have an unusually high efficiency rating. Write today for new bulletin giving complete details.
driQuik DIVISION
DRY CLIME LAMP CORP. Greensburg, Ind.

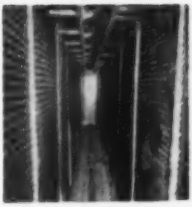
For more data circle **193** on Reader Service Card

• A true advancement in electroplating, ARco Diaphragm Systems have created a new standard in plating quality. Simply installed, Diaphragm Systems segregate anolyte from catholyte through canvas barriers between anode and cathode. This electroplating method, combined with ARco Rubber Lined Tanks and planned solution circulation, filters metallic insolubles from outside sources.

Reduce costly buffing due to roughness . . . prevent rejects because of thin spots . . . have ARco engineers show you how Diaphragm Systems can save time, materials . . . and customers.



• ARco Two Work Lane Diaphragm Plating Tank



• ARco Horizontal Diaphragm Installation

For uniformly high quality and economy in plating...

DIAPHRAGM SYSTEMS *and* RUBBER LINED TANKS

by ARco

ARco Vertical Diaphragm Installation

AUTOMOTIVE RUBBER CO., INC.

12564 BEECH ROAD • DETROIT 39, MICH.

Manufacturers • Designers • Engineers

•

ARco RUBBER PROCESSORS
4033 Homestead Road
Houston • Texas

ARco Diaphragm Plating Tank, return bend type

AUTOMOTIVE RUBBER CO., INC.
12564 Beech Rd., Detroit 39, Mich.

Please rush me _____ copies of your "Diaphragm Tanks Promote Plating Progress."

Name_____

Firm_____

Street_____

City_____State_____

For more data circle 194 on Reader Service Card

"Poly-Ep" Platon is available in clear and colors, including metallic, in gloss or satin finish.

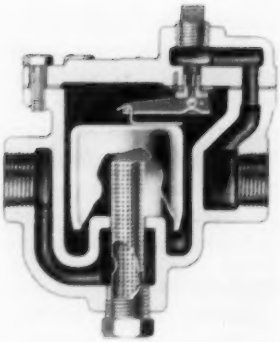
For more data circle 17 on Reader Service Card

★ ★ ★

Steam Trap

Sarco Co., Inc., Empire State Bldg., New York, N. Y., has announced an inverted bucket steam trap with a cam-lift valve mechanism which permits large discharge capacities and ensures quick opening in a trap of minimum size.

Another outstanding advantage of the trap is a design feature which is said to prevent loss of prime condensate. Conditions conducive to loss of prime are light loads, rapid pressure drops and partial vacuum in the line caused by night shutdown. Several models are available incorporating the advantageous features, and no reduction in capacity or operating range has been necessary to accomplish these improvements in design.



Sarco Inverted Bucket Steam Trap

For more data circle 18 on Reader Service Card

★ ★ ★

Plating Process

A plating process known as "Cunit" has been perfected in Denmark recently on a commercial scale and is now available in America under licensing arrangements.

Cunit approximates polished sterling silver in appearance, and has a soft, lustrous, brilliant finish. It does not tarnish or require polishing.

An electrodeposited alloy, it consists principally of copper and tin and can be applied over steel and most non-ferrous metals.

The alloy can be applied in a uniform quality, making it suitable for tableware, electrical appliances, and other products.

Cunit forms a compact and non-porous coating that adheres firmly to the base metal. Intermediate between nickel and chrome in hardness, it is highly scratch resistant. In order to develop a bright luster, buffing is necessary.

Park
No. 290
BLACKENING
SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

For more data circle 195 on Reader Service Card

Have You A Paint Adhesion Problem?

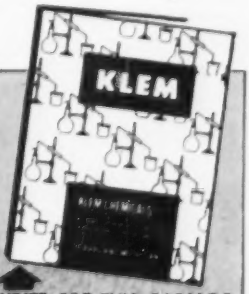
Klem Offers 2 Standard Products for cleaning and Phosphatizing that Meet Practically Every Situation

KLEM "Minit-Kote" — 1 STAGE

An economical, fast one-stage cleaning and phosphatizing solution for use where the problem is not complicated.

KLEM "Klem-Kote" — 3 & 5 STAGE

A multiple stage cleaning and phosphatizing compound for use where removal of rust, grease and foreign matter offers a tough cleaning probem.



WRITE FOR THIS CATALOG

KLEM

CHEMICALS, INC.

14401 Lanson Ave., Dearborn, Michigan
1905 Central Ave., El Monte, California

For more data circle 196 on Reader Service Card

Other characteristics of Cunit have led to its use in certain case hardening applications. Ease of control is emphasized through the use of only one plating alloy.

The principal equipment requirements for this process are a heated tank and a ventilating system to carry off fumes developed in the process.

Samples and details of Cunit plating are available from Danmark Cunit, Inc., 125 Ivy Street, N. E., Atlanta, Ga. The firm will plate Cunit on test items for interested manufacturers for comparison purposes.

For more data circle **19** on Reader Service Card

★ ★ ★

Paint Stripper

Octagon Process, Inc., 15 Bank St., Staten Island 1, N. Y., has announced Octastrip 33, which removes vinyl enamel from phosphated aluminum without damage to the base metal.

Octastrip 33 was developed for a manufacturer of aluminum venetian blinds and awnings. The stripper removes the vinyl enamel double coat after immersion of the painted parts in a tank for one-half to a full hour. The coating lifts off the metal in almost perfect sheet form. Very little brushing is required to remove any remaining traces, it is stated. Simple washing after paint removal rinses all traces of the stripper from the metal and leaves the aluminum in a chemically passive condition.

For more data circle **20** on Reader Service Card

★ ★ ★

Film Thickness Gage

A pocket-sized gage which measures thin, transparent films in microinches, has been announced by Sunshine Sci-

ABRASIVE BELTS RECOATED

WILL CUT YOUR GRINDING COSTS AS MUCH AS 30 TO 35%

Don't throw away your used abrasive belts, we can recoat them and return them to you as good as new. The saving in grinding costs to you is substantial.

Write and let us know the type of product, size, grit, backing and type of material to be polished.

K. C. JACKSON ABRASIVES, INC.

PHONE GLADSTONE 7-8663 • GLENWILLARD, PA.

For more data circle **197** on Reader Service Card

SEYMOUR

means

SERVICE

with a big...

Seymour service extends beyond the making of Anodes and Bright Nickel. It goes right to the heart of your individual plating problems with the services available to you—without cost—in the Seymour Laboratory.

Here, a well-equipped staff of skilled technicians is ready to lend a hand whenever you need help.

SEYMOUR PLATING PRODUCTS

NICKEL ANODES in all standard shapes and formulas.

"SEYCAST" Nickel Anodes of 99% cast nickel.

ANODES of Copper, Brass, Bronze, Zinc in all types.

BRIGHT NICKEL produces bright deposits without coloring and buffing.

SEYMOUR ALSO MAKES . . .

Nickel Silver — Phosphor Bronze — Brass — Welding Rods.

THE SEYMOUR MANUFACTURING COMPANY

SEYMOUR, CONNECTICUT, U. S. A.

For more data circle 190 on Reader Service Card

Film thickness gage measures thickness by color comparison.

entific Instrument, 1810 Grant Ave., Philadelphia 15, Pa.

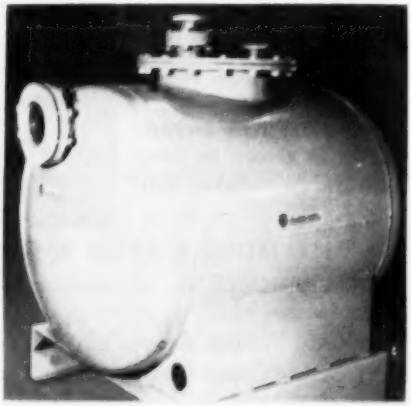
The step gage measures the thickness of thin transparent films by means of color comparison, in the range of 2 to 16 microinches. It consists of a plate of special glass enclosed in a plastic case. Colorless barium stearate is deposited on the glass in a series of monomolecular layers to build a series of steps. When illuminated by white light, each step reflects a different color as determined by its thickness. This color is compared to that of the unknown films to determine thickness.

For more data circle **21** on Reader Service Card

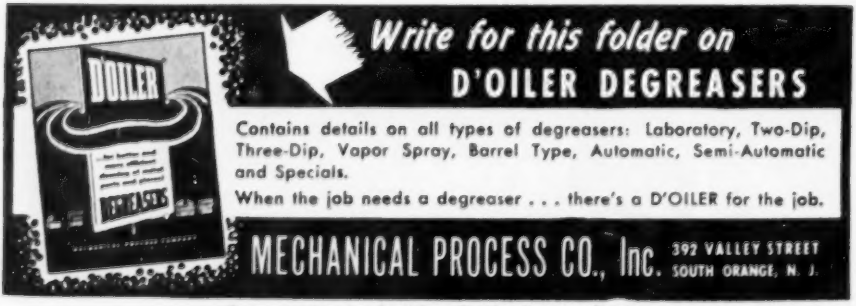
Portable Tank

A Portable Storage-Transfer Tank has been announced by the Heil Process Equipment Corp., Cleveland, Ohio. This tank on wheels is particularly adaptable to varying and intermittent requirements for heavy acids or industrial chemicals in different plant areas.

Several models are available, with a variety of sheet linings or coatings for protection against many corrosive elements, and with capacities of 200 gallons and up. They have been found efficient as transfer tanks, eliminating carboy handling, and useful as temporary storage units during repair or cleanout of permanent storage equip-



Portable Storage and Transfer Tank


DOILER
DEGREASERS
Write for this folder on
D'OILER DEGREASERS
Contains details on all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic and Specials.
When the job needs a degreaser . . . there's a D'OILER for the job.
MECHANICAL PROCESS CO., Inc.
392 VALLEY STREET
SOUTH ORANGE, N. J.

For more data circle **199** on Reader Service Card

CONTROLLED GRAIN SIZE: APW Extrusion Process* controls grain size within definite limits—*minimizes shedding!*

ROLLED FLAT PLATE ANODE SECTION:

This Photomicrograph shows highly irregular, uncontrolled grain size—a major cause of shedding and resultant rough electrodeposits.

APW EXTRUDED ANODE SECTION:

Note small, fully controlled regularity of grain size that promotes uniform corrosion, smoothest electrodeposits, less rejects.

*Pat. Pending

NEW! SHAPED, EXTRUDED APW SILVER ANODES

STANDARD SHAPES: "RECTANGULAR" "TEAR DROP" "DOG BONE"

The common problem of shedding and all of its costly results in electroplating can now be virtually eliminated with the radically new extruded, shaped silver anodes made by an exclusive APW-developed process.

The small and uniform grain size produced in the new APW extruded anodes is controlled between definite ideal limits as illustrated above. As a result, corrosion is *smooth and uniform*—with consistently smooth electrodeposits. Rejects are a comparative rarity.

The new APW extruded anode provides equally important advantages by redistribution of mass metal in scientifically determined shapes. While conventional rolled flat plate anodes quickly wear to a sharp knife edge from which silver particles break loose readily, APW shaped anodes maintain substantially rounded edges for practically the complete life of the anode. Anode area is also appreciably prolonged. After 85% by weight has been plated off, *this APW anode retains 80% of original active surface area!* You profit with the longer, useful life of the anode . . . polarization is minimized . . . there is less silver scrap to be refined.

APW will develop special anode shapes to meet particular plating bath conditions. You are thus assured of utilizing the silver you buy in anodes most efficiently. Feel free to consult us on any anode problems you may have. ★ ★ ★

THE AMERICAN PLATINUM WORKS

APW

231 NEW JERSEY RAILROAD AVENUE • NEWARK 5, NEW JERSEY

For more data circle 200 on Reader Service Card

ment. Tanks are available equipped with either skids or casters.

For further information write Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

For more data circle **22** on Reader Service Card

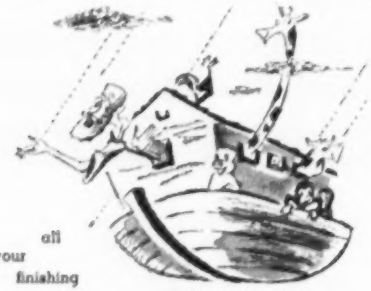
★ ★ ★

Rigid Polyvinyl Chloride Products

Techniques for molding refractory plastics such as pure polyvinyl chloride have been announced by the Stokes Molded Products Division of the Electric Storage Battery Co., Taylor and Webster Sts., Trenton 4, N. J. These techniques permit economical processing of rigid polyvinyl chloride in intricate and complex shapes, for small lots as well as large production runs.

Rigid PVC has excellent resistance to corrosive fumes and liquids and to industrial chemicals, fumes, and wastes. Thus it has excellent possibilities for constructing electroplating tanks, valves and pipe fittings, ductwork, and in other applications where corrosion is a problem.

For more data circle **23** on Reader Service Card



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J. Holland & Sons offers you the most comprehensive operation in the entire finishing industry. Because we maintain one of the world's largest in-stock supplies of polishing, plating and spray equipment, we can deliver merchandise immediately.

Get dependability, complete satisfaction and "one-stop" buying. Our engineering and technical staff is ready to assist you in solving special problems.

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leaders in finishing equipment for over half a century

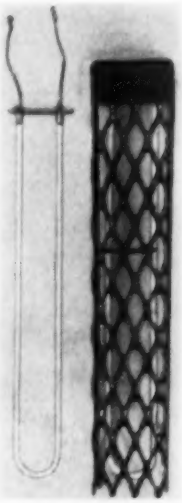
475 KENT ST. (cor. Union Ave.), B'KLYN 11, N. Y.

For more data circle **201** on Reader Service Card

★ ★ ★

U-Type Immersion Heater

The Glo-Quartz Electric Heater Co., Inc., Willoughby, Ohio, has announced the U-type Immersion Heater, an electric radiant translucent fused quartz immersion heater for acid electroplating and pickling solutions.



U-Type Quartz Immersion Heater

This heater consists of two interchangeable components, the U-shaped quartz heating element, and the combined junction box and guard assembly. The resistance heating element is mounted inside the U-shaped quartz tube and the coil is supported with a heat-conducting powder. Hermetic sealing locks out acid fumes. The U tube element rests, at the top, on a neoprene gasket which absorbs mechanical shock on the guard.

The U-type heaters are made in standard voltages and wattages.

For more data circle **24** on Reader Service Card

★ ★ ★

Exhaust Fan

The Propellair Division of Robbins & Myers, Inc., Springfield, Ohio, has

SPEED UP PRODUCTION with DOUBLE-ACTION DRYING

Air-dry as you spin-dry with the new, improved New Holland Model 20 KREIDER CENTRIFUGAL DRYER

• Now you can *spin-dry* small parts in continuous *fresh air* in as little as 15 seconds.

Double-action drying with peak-efficiency evaporation gives smooth moisture-free surfaces . . . reduces your finishing problems by eliminating the scarring frequently responsible for costly "rejects."

Your operators will be able to boost production, cut costs way down when you install New Holland's easy-to-run Model 20 Kreider Centrifugal Dryer.

SAFER because of Mechanical and Electrical Control Features!

To unlock cover and remove basket, operator must depress foot brake, stop spinner.

Machine cannot start with open cover. Ample clearance allowed for quick loading.

To start spinner, operator must first close cover completely.

SPECIFICATIONS:

1 h. p. motor—220, 440, 550 volts—2- or 3-phase—spins 75-lb. loads at 825 r.p.m. . . . Quiet V-belt drive . . . 30-blade suction turbine draws air through spinner . . . . Arc-welded steel-plate construction . . . Heavy-gauge woven steel mesh basket . . . Weight: 490 lbs. . . . Floor space: Just under 5 sq. ft. . . . Meets N.F.C. specs. **Optional:** J.I.C. Control: Mounted on right, left side or wall. 160° supplementary heat: 2350-watt Chromalox, or steam.

Send for illustrated 4-page folder. Address Dept. PF-1155 New Holland Machine Company, New Holland, Pa.

NEW HOLLAND MACHINE COMPANY
NEW HOLLAND, PA.

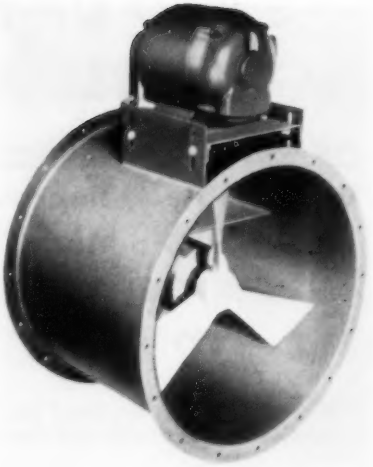
For more data circle 202 on Reader Service Card

introduced a belt-driven tubeaxial propeller fan designed for handling corrosive exhaust and high temperature fumes. It is available in five sizes from 16 through 36 inches, and has air delivery ratings to 26,000 c.f.m.

Designated as Type BT, these fans feature integrally rolled mounting flanges and continuous welded seams, to eliminate the possibility of fume or condensate leakage and corrosion.

Propellers are cast from an aluminum-magnesium alloy which provides high tensile and shock strength as well as dimensional stability. This alloy has good corrosion resistance.

A rigid, one-piece cast-iron housing isolates the fan bearings from the fume-carrying air stream. Both bearing seats are machined at one setting to assure perfect alignment. Sealed, pre-lubricated, single-row ball bearings running in double-width races provide large lubricant capacity. Three bearing assembly



Corrosion Resistant Exhaust Fan

designs are available: totally-enclosed, ventilated (for high temperature requirements) and corrosion resistant.

All metal parts receive a special coating to inhibit rust and corrosion. The ball bearings are fully sealed to prevent lubricant contamination.

For more data circle **25** on Reader Service Card

★ ★ ★

Masking Tape

The Laurel Hill Corporation, 343 S. Dearborn St., Chicago, Ill., has intro-

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle **203** on Reader Service Card

CHEMSTEEL CONSTRUCTION COMPANY, INC.
301 Chemsteel Bldg., Walnut St., Pittsburgh 32, Pa.

Send data on Engineering & Construction facilities for
ACID-ALKALI-PROOF CONSTRUCTION
of processing & storage tanks & flooring in
☐ Steel Plant ☐ Chemical ☐ Textile ☐ Food

NAME.....
COMPANY.....
ADDRESS.....
CITY..... ZONE..... STATE.....

For more data circle **204** on Reader Service Card

Friction surfaces need

PARCO LUBRITE

1915 40th year 1955

Every engineer learns it early: wear is a problem whenever two surfaces slide or roll against each other. But here is a surface treatment for metals which effectively *retards* wear on iron and steel.

Parco Lubrite converts the surfaces of iron and steel parts to a non-metallic phosphate coating integral with the metal itself. The coating is oil-absorbent. Because it is nonmetallic, it prevents metal-to-metal contact during initial operation. Break-in is smooth and easy, without galling or scoring. Treatment with Parco Lubrite increases subsequent service life, too.

Parco Lubrite can help you solve your problems of wear on friction parts. Let us give you full details on the simplicity, economy and efficiency of this excellent product. Write today!

Bonderite, Bonderlube, Parco, Parco Lubrite, Parker Pre-Treat: Reg. U.S. Pat. Off.

PARKER
RUST PROOF COMPANY
2172 East Milwaukee Ave.
Detroit 11, Michigan

Since 1915—Leader in the Field

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
Corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1953

For more data circle 205 on Reader Service Card.

duced an industrial tape called Laurel Hill Industrial Tape No. 4. Important features are: good stain resistance, solvent resistance and water resistance; good performance under high temperatures (to 300 deg. F.); no residue deposit, overnight or after baking; and no edge curl from solvents or water. It will be available in 60 yard rolls of ¼ to 3 inch widths on large cores for wrist holding.

LH Industrial Tape No. 4 is said to have enough quick tack to adhere with light finger touch to either cleaned or dirty surfaces. The tape is flexible and has sufficient stretch in use to fit around curves of trim.

For more data circle 26 on Reader Service Card

★ ★ ★

Tack Cloth

Exceptional tackiness imparted by a unique formula is reported for a tack cloth being offered by the George W. Renner Co., 5412 Smith St., Fort Wayne, Indiana.

Used in metal wiping applications when high quality finishes are to be applied, the Tac-All tack cloth is said

Tack Cloth removes dust and grit.

No New Penny Could be Brighter — than

COP-BRITE

A One-Material Brightener

FOR ALL BARREL AND STILL CYANIDE SOLUTIONS

- PRODUCES a softer and smoother deposit
- YIELDS a brighter finish better and faster
- ELIMINATES noxious cyanide fumes
- PROVIDES pre-eminent satisfaction, greater economy

Information on Request

JELCO

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New York 10, N. Y.
LExington 2-3055

FINISHING EQUIPMENT CORP.

For more data circle 206 on Reader Service Card

Filter your Solutions!

*Reg. App. For

50-2400 GAL./HR.

Model LSI-10...Cap. 100 gal/hr. H.T. Lucite Filter Assembly. Stainless pump...totally enclosed Motor...portable... Wt. 40 lbs.....12"x16"x16" high. Distributors in Principal Cities. Write for FREE Literature.

PARTIAL LIST OF MODELS

Model	Rated Capacity	Overall Size	Weight
LSI-5	50 gal./hr.	11"x14"x12"	30 lbs.
LSI-10	100 gal./hr.	12"x16"x14"	40 lbs.
ASI-300	300 gal./hr.	2'x2'x2'	125 lbs.
ASI-600	600 gal./hr.	2'x2'x2'	150 lbs.
RLS-1200	1800 gal./hr.	2'x3'x3'	300 lbs.

SERVICE . . . Filters practically any acid or alkaline solution from pH 0 to pH 14; removes particles down to one micron in size. Strainer stops metallic objects.
DESIGN . . . **Filter Assembly** fabricated of stainless steel 316, high temperature lucite, rubber-lined, Haveg or Sethria* resin. **Filter Tubes** of cotton, dynel, porous stone or porous carbon. **Pumps** fabricated of Hastelloy, stainless 316 or plastic, centrifugal or self-priming. **Motors** drip-proof, totally enclosed, or explosion proof, 110 or 220 volt, single or three-phase, 50 or 60 cycle, sleeve or ball bearing. **Hose** — special acid and alkali resistant. **Base** — Linen Phenolic laminate on rubber tire ball bearing casters.

Sethco MANUFACTURING COMPANY
70-72 Willoughby Street · Brooklyn 1, N. Y.

For more data circle 207 on Reader Service Card

LARGE corrosion PROBLEMS

Perma-Line builds and lines tanks for plating and acid handling

SMALL corrosion PROBLEMS

Acid - handling valves — rubber and Plastisol lined and plastic type valves

FIELD corrosion PROBLEMS

Perma-Line

has helped to solve them ALL!

Perma-Line corrosion and erosion resistant products and services have, for many years, solved corrosion problems in various industries at a reasonable cost.

Our experienced technical staff is prepared to help you solve those corrosion "bottle-necks" that slow down production in your plant or field operations.

Why not consult Perma-Line about your particular corrosion problems? Inquiries given prompt attention.

Send for FREE Book . . . "Perma-Line Linings for INDUSTRY"

Perma-Line Corrosion-Resistant Services and Products include:

Plant and Field Installations • Metal and Rubber Fabricated Parts • Tank and Tank Linings • Perma-Coil Heat Exchanger Coils • Ventilation and Exhaust Systems • Pipe and Fittings • Brick and Mortar • Perma-Plugs • Plating Accessories • Anode and Industrial Baskets • Coatings and Paints

Perma-Line PRODUCTS

PERMA-LINE RUBBER PRODUCTS CORPORATION

1753 No. Winnebago Ave. • Chicago 47, Illinois • Tel. HUmboldt 9-2020

For more data circle 208 on Reader Service Card

to remove all dust and grit particles.

The substance used to impregnate the cloth resists drying indefinitely and offers no danger of spontaneous combustion, according to the maker. It is non-reactive on any metal surface, including magnesium.

In principle, all dirt and dust particles are absorbed into the cloth by the tack substance after a single pass with the cloth rather than remaining on the surface to clog holes and create abrasive hazards. Softness and pliability characteristics enable the user to work sharply contoured surfaces.

For more data circle **27** on Reader Service Card

★ ★ ★

Compact Filter

Sel-Rex Precious Metals, Inc. of Belleville, N. J. has announced a compact filter featuring high capacity, with either a stainless steel-cloth bag or porous stone element. With 800 g.p.h. capacity, it is called the Sel-Rex "Little Giant" filter.

The entire filter element is fastened to a hand-tightened cover, and can be lifted out manually for washing.

The portable "Little Giant" requires only 50 inches of head room and measures 32 inches in diameter at the base. All working parts are suspended underneath the tank to protect them from dirt and drippings. Units are constructed of stainless steel, and are furnished complete with operating valves, motor and pump. Units are also available with all iron parts for use with alkaline solutions.

Sel-Rex Solution Filter

For more data circle **28** on Reader Service Card

★ ★ ★

Screen Process Decorator Press

An automatic press for silk screen process and printing on a wide variety of sheet materials and flat objects has

POCKET **HANDI-GAGE**

A MAGNETIC THICKNESS TESTER

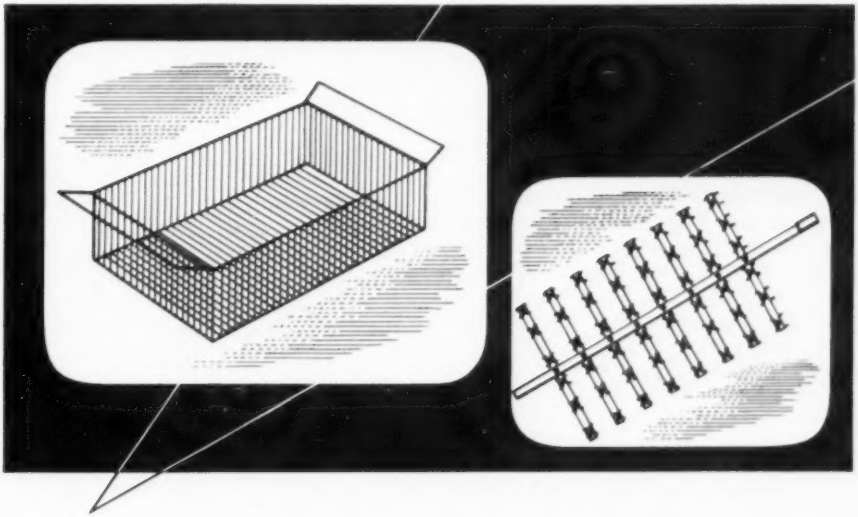
for electrodeposited, hot-dipped and painted coatings on steel. No bigger than a fountain pen, but what a job it does! Tests plated, painted, enameled, or plastic laminated coatings in SECONDS—in the lab or on the production line. Accurate, quick and easy to use.

WRITE FOR FULL INFORMATION

59 EAST 4TH STREET — NEW YORK 3, N. Y.

Platers Research Corporation

For more data circle **209** on Reader Service Card



PLATING EQUIPMENT STANDS UP LONGEST... with a COATING OF STANLEY CUSTOM PLASTISOL

Racks and other containers handle work with care if they're coated with one of Stanley's complete line of plastisols. High resistance to most chemicals plus a slick surface for fast drain-off and minimum carry-over add up to surface protection that lasts. If your operation uses trichlorethylene or perchlorethylene, specify Stanley 77X-1078 orange plastisol. Write for details to Stanley Chemical, 31 Berlin St., East Berlin, Conn.

Midwest representative: Russ-Howell Agency, Detroit and Grand Rapids.

Ask for FREE Bulletins on Stanley plating rack coatings.

STANLEY CHEMICAL

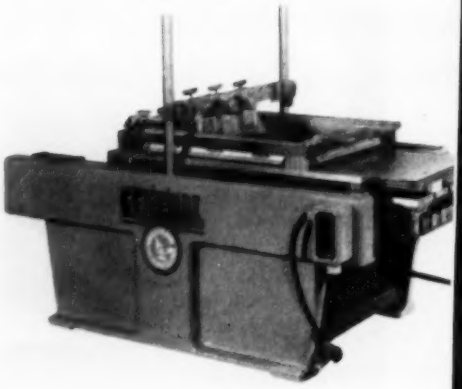
LACQUERS
SYNTHETICS
VINYLS
ENAMELS

For more data circle 210 on Reader Service Card

been announced by the General Research & Supply Co., 572 S. Division Ave., Grand Rapids, Mich.

The General Decorator Press, Series B, is said to have three basic elements: a reciprocating one piece bed which supports and carries the work; a reciprocating stencil frame; and, a stationary squeegee. The work is hand registered to fixed guides fastened to the press bed. During the printing stroke the work is held flat and in position by vacuum holes in the bed.

According to the manufacturer, the press will operate either at a constant cycle or at an adjustable intermittent cycle. One operator feeds and removes the sheets from the front of the press. A rear delivery is optional equipment permitting straight line operation from feeding through printing directly into a drying system.



General Decorator Press, Series B

The General Screen Process Decorator Press, Series B, is built in three sizes with maximum sheet sizes ranging from 13 by 25 inches to 19 by 37 inches.

For more data circle 29 on Reader Service Card

★ ★ ★

Pressure-Sensitive Tape

A pressure sensitive tape identified as Mystik Brand No. 7000-G has been announced by Mystik Adhesive Products, 2635 N. Kildare Ave., Chicago, Ill.

Utilizing a Fiberglas backing and an inorganic silicone adhesive, this pressure-sensitive tape offers a high degree

LANLY
FINISHING OVENS
THE LANLY COMPANY • 760 PROSPECT AVE
CLEVELAND, OHIO
WRITE FOR INFORMATION AND LITERATURE

For more data circle 211 on Reader Service Card

NOW
FUSECOAT
"T"
coating of
Tungsten Carbide
Licenses available
U.S. PAT. #2,694,647

LONGER WEARING FIXTURES
For Polishing and Buffing Machines

Your buffing and polishing fixtures that are subject to wear can now be FUSECOATED to last longer. Fixtures designed for FUSECOATING can be lighter and are less expensive for you to make. Procedure sheets are available. Write for folder or send us drawing or sample of part to be coated. We will send you a cost estimate and approximate delivery date by return mail.

FUSION METAL COATING CO. • 25493 W. 8 MILE ROAD DETROIT 19, MICHIGAN

For more data circle 212 on Reader Service Card

of stability in the presence of sulfuric, hydrochloric, acetic, and nitric acids, lubricating oils, ammonia, chlorine, bromine, and iodine, it is stated.

For more data circle 30 on Reader Service Card

★ ★ ★

Paint Strippers

To meet the need for stripping the highly resistant paints, enamels and other type finishes, The DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio, has announced Rip and Raze, two liquid organic solvent type compounds.

These two compounds are intended for unheated usage. Rip is a mobile liquid for immersion tank use, on work of such size and type that it can be immersed. Raze is a bodied liquid which clings to surfaces instead of running off. It is brushed on for stripping large assemblies, vehicles or other structures.

In either case, the immersion or brush off is followed by a suitable dip, spray or pressure rinse with water or in special cases with a suitable detergent for wash-off.

For more data circle 31 on Reader Service Card

Maintenance Coating

Corrocote No. 362, a neoprene base protective coating that guards surfaces against moisture, oils, chemical fumes and splash, salt air and fungus corrosion, has been developed by Chemical Coatings & Engineering Co., Bromall, Pa. Applied by roller, brush, spray or dip, the film dries quickly and self-vulcanizes to form a firm rubbery barrier. The natural characteristics of the Corrocote film eliminate failures caus-

Better Metal Finishing . . AT LOWER COST!

Take Chromium Plating, for example. You can save on costly rejects and replates — assure maximum production rates — by holding your plating solutions at a constant uniform temperature. Powers Temperature Controls often repay their cost 3 to 6 times yearly by reducing plating expenses.

POWERS Series 100 TEMPERATURE INDICATING CONTROLLER

In CHROMIUM Plating:

Too HIGH a temperature can result in:	Too LOW a temperature can result in:
1. Burnt deposits	1. A slow rate of plating
2. Frosty deposits	2. Milky deposits
3. A decrease in cathode efficiency	3. A decrease in tensile strength
4. A loss in throwing power	4. A decrease in deposit density
5. A soft deposit	5. Cracked deposits
	6. Dark deposits

(c45)

Install POWERS AUTOMATIC TEMPERATURE CONTROL

For All Metal Finishing Processes

Write for Bulletin 330

THE POWERS REGULATOR CO.

Skokie, Ill. • Offices in 60 Cities • See Your Phone Book

Over 60 Years of Automatic Temperature and Humidity Control

For more data circle 213 on Reader Service Card

ed by expansion, contraction and mechanical vibration. The cured film resists abrasion, will not support combustion, resists sunlight and weather, is a non-conductor, and is said to counteract electrolytic corrosion. It has good adhesion to metal, concrete, wood and fabric. Coatings can be exposed to continuous air temperatures up to 250 deg. F. and intermittently to 300 deg. F. Films of 0.003 to 0.005 inch thick can be applied per coat, covering sharp edges, welds and corners. On walking surfaces—metal, wood, and concrete—Corrocote can be sprinkled with sand while the coating is wet, the finished surface giving good non-slip qualities.

For more data circle **32** on Reader Service Card

* * *

Spray Booth Coating

BoothGuard, a "spray on—strip off" protective coating for spray booths and spray areas has been developed by Guard Coatings Corp., 8-05 43rd Ave., Long Island City, N. Y. The water-type coating is sprayed on the walls and ceilings of the booth, where it quickly dries and forms a thin white film. When paint overspray accumulates, BoothGuard is easily stripped off the walls in large sheets, taking the overspray with it and leaving an absolutely clean booth.

BoothGuard water-type coating is non-flammable in liquid form. Only one coat is necessary to cover an area completely. This coating will not feather or web when sprayed on, nor tear or shred when stripped off.

BoothGuard is an effective means of ensuring cleanliness in spray areas, and in any section of the plant where walls and floors become soiled.

For more data circle **33** on Reader Service Card

* * *

Editor's Note

In the article describing the Disposable Plating Solution Container, introduced by Seymour Mfg. Co., Seymour, Conn., published on page 140 of the October, 1955 issue of PRODUCTS FINISHING, the point was not made clear that *both* the container and the bottles in which the Seymour bright nickel solution is shipped, are disposable and do not need to be returned. With the new type container, users are spared the trouble of returning empty solution bottles.

For more data circle **34** on Reader Service Card

METABOND

MEANS *PROGRESS* IN RUSTPROOFING

METABOND is the only effective immersion or spray amorphous type zinc coating in the industry today.

METABOND withstands severe and consistent flexing and bending without chipping or breaking bond.

INTERNATIONAL RUSTPROOF CORPORATION

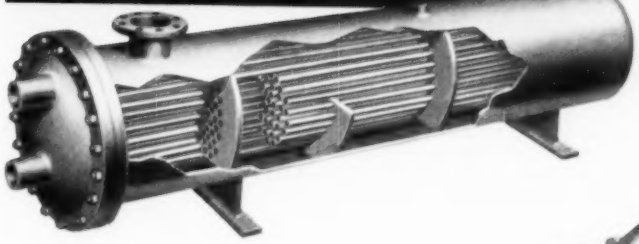
12507 PLOVER AVENUE • • • • CLEVELAND 7, OHIO

MANUFACTURERS OF RUST PREVENTIVES AND CORROSIVE SOLVENTS

For more data circle **215** on Reader Service Card

HEAT EXCHANGERS

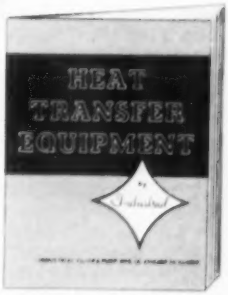
for
CORROSIVE
and
NONCORROSIVE
LIQUIDS
and
GASES



Industrial
tailored units

Whether for laboratory or pilot-plant requirements or large-quantity processing, it will pay you to look into the INDUSTRIAL tailored units for heating or cooling liquids or gases. Rather than adaptations of standard units, INDUSTRIAL heat exchangers are engineered and built to individual performance specifications. Depending on size and other operating conditions, the INDUSTRIAL heat exchanger may be a large single- or multiple-pass tube-bundle type or a series, parallel, or series-parallel combination of individual single- or multiple-tube units. In any type unit, thermal shock and the requirements of the corrosive or noncorrosive fluid on the tube or shell side determines the materials of construction. Thus, each INDUSTRIAL tailored heat exchanger embodies the ultimate in operating performance and efficiency at lower initial and maintenance costs.

Get INDUSTRIAL'S recommendations for your next heat transfer equipment.



This Bulletin describes the INDUSTRIAL service on heat transfer equipment.

Ask for Bulletin 600-2.

5058

INDUSTRIAL
FILTER & PUMP MFG. CO.

5904 Ogden Avenue • Chicago 50, Illinois

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS
HEAT EXCHANGERS
CORROSION TEST CABINETS
CENTRIFUGAL PUMPS

For more data circle 216 on Reader Service Card

News of the Industry

NEW PLANTS

R. A. Jackson

Tim G. Meulenberg and Robert L. Redmond, president and vice president of **Automotive Rubber Company, Inc.,** Detroit, have announced a new subsidiary, **ARco Steel Fabricators, Inc.**

Heading ARco Steel Fabricators, Inc. is **R. A. Jackson,** general manager.

The new firm will specialize in design, fabrication, assembly, construction, and installation of processing equipment for every phase of industry. This subsidiary will complement Automotive Rubber Company's rubber processing operations by furnishing the latter with tanks, vessels, pipe, fittings, and a variety of fabricated equipment for the application of corrosion-resistant rubber and plastic coatings and linings.

Recently built and equipped, the new ARco Steel Fabricators plant is located on property adjoining the parent company's general offices, laboratories and lining plant at 12550 Beech Rd., Detroit.

Dr. Hendrik van der Horst

Dr. Hendrik van der Horst, president of the **Van der Horst Corporation,** has announced that the corporation will establish plant facilities in Chicago. The property on which the plant will be constructed consists of 37,000 square feet of manufacturing facilities and 15,000 square feet of yard space.

The Van der Horst Corporation, one of the world's largest electroplating organizations, has plants in Olean and Salamanca, N. Y.; Terrell, Texas; Hilversum and Zwolle, Holland.

Porus-Krome, the porous chromium, is used extensively on the bores of the cylinders of internal combustion engines manufactured for service in the railroad, marine, aviation, power, oil and gas industries. In addition, thousands of worn internal combustion engine cylinders are processed annually on a reclamation basis in the various Van der Horst plants.

Initial installations at the Chicago plant will provide for a 48,000 ampere hour plating capacity.

ARco Steel Fabricators, Inc., new subsidiary of Automotive Rubber Co., Inc., Detroit, Michigan

To provide quicker, more convenient service to customers in the Chicago territory, **United Chromium Division of Metal & Thermit Corporation** has established warehousing facilities at 415 East 151 St., East Chicago, Ind., it has been announced by Henry Mahlstedt, divisional sales manager.

The United Chromium Chicago sales office, now located at 208 S. LaSalle St., has also been moved to East Chicago. The warehouse and sales office will be integrated with the Metal & Thermit facilities at East Chicago. **Willard Carter,** sales manager of the Chicago office, will head the United Chromium operation in East Chicago.

Before and after samples of flood-damaged parts cleaned with Norton tumbling abrasive.

COMPANIES

Enlarged technical service laboratories have been opened by the **J. B. Ford Division** of **Wyandotte Chemicals Corporation,** in Wyandotte, Mich. and in Los Nietos, Calif. — near Los Angeles. These enlarged headquarters facilities will enable the more than 200 Wyandotte Chemicals resident representatives to give faster "trouble shooting" service.

Unless you have seen the ravages of flood waters on the rampage, you can't imagine the incredible mess that is left in the wake. In manufacturing plants such as those recently inundated in Massachusetts and Connecticut, stores of finished and partly finished parts were left covered with rust and mud.

A quick solution to the salvaging problem, used by many companies, was barrel finishing. Since the parts were already finished, only a short time in

(Left to right) Seated: Beatrice Rike, secretary to Mr. Anderson; Vera Heins, secretary to Wyandotte Chemicals Product Control Center; Lee Minor, field service representative; Donald E. Anderson, director technical service, J. B. Ford Division; Gail Smith and Armin Roth, field service representatives; Beverly Compeau and Rosalie Giaimo. Standing: Al Weimar, resident representative in Chicago; Edward Kubis, industrial field service representative; Howard Anderson, Theodore Poloway, Jack Bowen, Leo Hawk, Tom Gilman and Victor Boka of the Wyandotte, Michigan laboratories; Richard Booth and Fred Vassar.

the barrel was needed to remove the dirt and rust. An hour or so in the tumbling abrasive, clear water, and a suitable cleaner restored the parts to their original condition. In addition to doing this job quickly, it eliminated manual handling of parts covered with disease carrying mud.

★ ★ ★

Purchase of the **Peters-Dalton Co.**, of Detroit, producers of spray booths, washers and ovens for the automotive and other metals industries, by the **Detroit Harvester Co.** has been announced by J. Thomas Smith, Harvester president.

Peters-Dalton, retaining its name and personnel intact, became a wholly-owned Detroit Harvester subsidiary.

The acquisition of Peters-Dalton was part of the long-range expansion and diversification program of Detroit Harvester, producers of automotive parts and equipment, power lawn mowers and farm mowers.

★ ★ ★

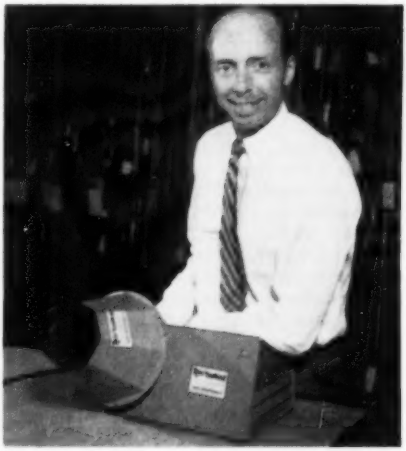
Headquarters of the Central Atlantic Coast Technical Field Section of the **International Nickel Company** Development and Research Division are now located in the Philadelphia area, in the Abington Bldg., 1150 York Rd., Abington, Pa., according to an announcement by Donald J. Reese, assistant manager of the Division.

This Section covers the New York City area, including Long Island and Poughkeepsie; New Jersey; Delaware; Maryland; Virginia; District of Columbia, and Pennsylvania east of Harrisburg. It furnishes industry with technical information and assistance relating to nickel and alloys containing nickel.

William C. Mearns, who has been in charge of the Section since 1945, continues as its head.

★ ★ ★

Rampe Manufacturing Co., 14915 Woodworth Ave., Cleveland, Ohio, conducted a contest at the Industrial Finishing Exposition, during the A.E.S. Convention last June, to name a small bench tumbling machine.



A. D. Schwegler, Jr., winner of Rampe bench tumbling machine at Industrial Finishing Exposition.

From the many names submitted, "Mini-Tumbler" was selected as the most descriptive. This name was suggested by **A. D. Schwegler, Jr.**, research supervisor for The Cleveland Twist Drill Co., Cleveland, Ohio. The prize was a Mini-Tumbler.

★ ★ ★

A new Electronic Data Processing System using UNIVAC as the central electronic file computer will be installed in the executive office building of

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The Carborundum Company, Niagara Falls, New York, according to an announcement by General Clinton F. Robinson, president of the company.

At first it will service the data processing needs of Carborundum's plants and sales offices in the United States. Plans call for it to eventually service all 12 divisions and subsidiaries of the company in the U. S. and Canada and perform limited service for 13 plants outside North America.

★ ★ ★

Kenneth G. Phillips

The **W. W. Sly Manufacturing Company**, Cleveland, has expanded West Coast engineering and service facilities with the opening of a new branch at 4645 E. Olympic Blvd., Los Angeles 22, California. **K. G. Phillips** serves as district sales engineer in handling the Sly line of dust control systems, blast cleaning equipment, tumbling mills and industrial ovens.

Mr. Phillips has been with Sly for eight years as assistant sales manager.

★ ★ ★

The **George L. Nankervis Company** of Detroit, manufacturers of laboratory and production testing equipment for the automotive and aircraft industries, has announced the purchase of **Commercial Research Laboratories, Inc.**, Detroit, builders of COX instruments, flowmeters and related scientific equipment.

Name of the new company will be Commercial Research Division, George L. Nankervis Company. It will continue to operate with its own personnel under the direction of Claude E. Cox, founder and president.

Celebrating the twentieth anniversary of the founding of American Buff Company, Chicago, Ben P. Sax, president, distributes bags of silver dollars to Chicago plant employees. In photo, left to right: Sylvester Mockiewicz, Leonard Sax, Willie Swope, Bill Chill and Ben P. Sax. Employees shown boast length of service records in excess of fifteen years with American Buff Company.

NEW POSITIONS

F. P. Spruance, Sr., who has been a vice-president of the **American Chemical Paint Company** and sales manager of the Metalworking Chemicals Division for more than 30 years has resigned and is succeeded by **F. P. Spruance, Jr.** In his new capacity, F. P. Spruance, Jr., wil direct the sales pro-

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gram of the Ambler, Pennsylvania, firm's Metalworking Chemicals Division.

Mr. Spruance, Sr., will continue as a director of the company and, serving in a part time advisory and consulting capacity, make his years of experience in the metal industry available to his successors.

★ ★ ★

Harold H. Hill

Appointment of **Harold H. Hill** as general manager of automotive finishes for **Pittsburgh Plate Glass Company** has been announced by E. D. Peck, vice-president in charge of the paint and brush division.

Mr. Hill, formerly general manager of Pittsburgh Plate's Ditzler Division has been associated with the company for 20 years.

Two executive appointments in **Pittsburgh Plate Glass Company's** Paint Division have been announced by E. D. Peck, vice president in charge of the Paint and Brush Division.

Walther W. Ethier, Jr., formerly manager of the Atlanta Paint Division in East Point, Georgia, has been named general manager of the Newark, New Jersey, Paint Division.

Charles R. Holman has been appointed general manager succeeding Mr. Ethier at the Atlanta Division. Prior to his appointment Mr. Holman had served as assistant manager at Newark since 1954.

Charles R. Holman

Walter W. Ethier, Jr.

★ ★ ★

John E. Rowe

John E. Rowe has been elected to the board of directors of the **Binks Manufacturing Company.** Mr. Rowe is vice president in charge of the advertising and industrial relations departments.

Mr. Rowe has been with Binks for 20 years, starting as a field representative, selling the company's complete line of spray painting equipment.

Mr. Rowe was placed in charge of industrial relations in 1953 and elected a vice president of the company in September of that year.

★ ★ ★

Oakite Products, Inc., manufacturer of industrial cleaning and metal treating materials, has announced the appointment of **John C. Mullarkey** as technical service representative in Phoenix, Arizona. Mr. Mullarkey recently completed an intensive training course at the Oakite New York Headquarters and in the field.

★ ★ ★

Arthur G. Bignall has been elected president of Lasalco, Inc., St. Louis, replacing **Herman J. Struckhoff** who has resigned in order to establish his own metal finishing supply company on the west coast.

Mr. Bignall, formerly vice president

Arthur G. Bignall

Norman K. House

of Lasalco, joined the company in 1940 immediately after graduating from Purdue University where he obtained his B.S.M.E. degree.

Mr. Struckhoff will represent Lasalco in the western states on its complete line of electroplating equipment, as well as several other lines of finishing room equipment and supplies.

Norman K. House, formerly chief engineer of Lasalco, has been elected vice president.

B. G. Daw, formerly president of the company preceding Mr. Struckhoff, has been appointed a member of the board of directors. All other executive offices of Lasalco remain unchanged.

MEETINGS

On Saturday, Nov. 19, the **Philadelphia Branch A.E.S.** will hold its **Annual Educational Session and Banquet** at The Benjamin Franklin Hotel, Philadelphia.

The Educational Session, scheduled for 2:00 P.M. will feature talks by: Henry Strow, True Brite Chemical Products Co., "Advance Techniques in Copper Plating;" Dr. A. Kenneth Graham, Graham, Crowley & Associates, "New Concepts With Respect to the Use of Nickel or Nickel-Chromium Coatings;" and, Richard S. Scott, The Udylite Corp., "Electrical Circuits in Electroplating."

The banquet at 7:00 P.M. will be followed by a show and dance.

HONORS

The Chandeysson Electric Company and its employees have received a safety award in recognition of 371,751 man-hours of production time without

Chandeysson company officials receive a plaque in recognition of good safety record. (Left to right) James F. Carland, executive vice president and general manager of Chandeysson; Frank E. Lind, engineering supervisor for insurance company giving the award; T. A. Leonhardt, plant superintendent; and E. M. Howie, casualty manager of the insurance company.

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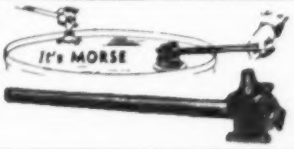

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a lost-time accident. Officers of the company received the plaque which was given in honor of the occasion in the presence of employees of the company, by the industrial hazard insurance underwriter.

It was pointed out in the brief ceremony that this award is a result of a comprehensive program of plant safety, involving better safety protection of potentially dangerous machines and employee safety consciousness and cooperation.

★ ★ ★

A dinner has been held in New York to honor **Dr. J. E. Stareck** upon his completion of 20 years service with

Dr. J. E. Stareck (left), director of research of the Metal & Thermit Corporation is presented with a gold watch on the occasion of his twentieth anniversary with the company by R. O. Loengard, vice president.

United Chromium. Dr. Stareck was presented with a gold watch by R. O. Loengard, vice-president of **Metal & Thermit Corporation.**

Dr. Stareck has held the position of director of research with United Chromium since 1941 and when United Chromium became a division of Metal & Thermit Corporation in May of this year he was made director of research for Metal & Thermit.

Dr. Stareck attended the University of Kansas where he received his MA in 1930. While working on the thesis for his doctorate he discovered the process of color plating now known as "Electrocolor." In 1933 he was awarded the Roy Cross Research Fellowship to further his studies of color plating. Dr. Stareck received his PhD in chemistry in 1934 and in 1935 joined United Chromium in the research laboratory. He continued his research on "Electrocolor" and shortly developed the related process of electrodepositing patterns known as "Patternplate." In 1939 he was awarded the Edward Longstreth Medal for these contributions in the field of coloring metals.

Other processes developed under his direction in recent years are copper plating from pyrophosphate solutions, high speed chromium plating, and "Crack-Free" chromium.

TRAINING COURSES

Anyone connected with, or interested in, the industrial application of paint and coatings is invited to attend the **Binks Manufacturing Company** free **School of Spray Painting.** Students are instructed in the proper use of spray painting equipment and learn how to get the best results from present installations.

The one-week courses for the remainder of the year will be held at the main Binks plant in Chicago on the following dates: Nov. 7-Nov. 11; and Dec. 5-Dec. 9.

In addition to spray painting, both manual and automatic, students learn the operation and servicing of spray guns, paint circulating systems, material handling pumps, oil and water extractors, flocking equipment, compressors, and all auxiliary equipment.

Application for attendance should be made as far in advance as possible by writing to Binks Mfg. Co., 3118-40 Carroll Ave., Chicago 12, Ill.

★ ★ ★

A **Course in Electroplating** is currently being conducted in the chemistry department of **Trinity University,** San Antonio, Texas, with William P. Wisdom, a member of the San Antonio Branch, American Electroplaters' Society, as instructor. The course

is sponsored by the **San Antonio Branch**, the Branch furnishing special reference books, special plating demonstration equipment (and the instructor). Trinity University provides facilities for holding classes.

The class meets one night each week for two hours. At the present time an elementary course of two semesters (36 weeks) is in progress, and it is planned to follow this next year with an advanced class, making a two-year course in all. At the present time, 25 students are registered in the course.

NECROLOGY

Edward Magnuson, president of Magnuson Products Corporation, died on October 16 after a prolonged illness. Mr. Magnuson was 77 years old.

★ ★ ★

Herbert J. French, 62, vice-president of The International Nickel Company, Inc., and assistant vice-president of The International Nickel Company of Canada, Limited, died August 17, 1955, in Rochester, Minnesota, after an extended illness.

An outstanding metallurgist, Mr. French was the recipient of many distinguished technical awards for his contributions to metallurgy.

MEETINGS of INTEREST to FINISHERS

Nov. 19. Annual Educational Session and Banquet, Philadelphia Branch, American Electroplaters' Society, Benjamin Franklin Hotel, Philadelphia.

Nov. 28-Dec. 1. 9th Exposition, Air Conditioning and Refrigeration Industry, Atlantic City, N. J.

Dec. 2-3. Detroit Branch, A.E.S., Annual Meeting and Party, Hotel Statler, Detroit.

Dec. 5-6. Year End Conference, Institute of Appliance Manufacturers, Netherland Plaza Hotel, Cincinnati.

Dec. 10-16. International Atomic Exposition, Cleveland Public Auditorium, Cleveland, Ohio.

Dec. 16-17. 42nd Annual Educational Session and Banquet, Newark Branch, A.E.S., Robert Treat Hotel, Newark.

Feb. 29. Symposium on Properties, Tests and Performance of Electrodeposited Metallic Coatings, Committee B-8, American Society for Testing Materials, Hotel Statler, Buffalo, N. Y.

Mar. 10, 1956. Tri-State Regional Meeting, American Electroplaters' Society, Biltmore Hotel, Dayton, Ohio.

Apr. 14. Empire State Regional Meeting, A.E.S., Statler Hotel, Buffalo.

Opportunity Section

SERVICEMAN WANTED

Industrial paint manufacturer needs an experienced man to service metal accounts. This man should be well versed in metal preparation; spray, electro-static, and roller-coater application; and all types of curing ovens.

Must have knowledge of wrinkle, hammer, and conventional metal industrial coatings. Will work generally in mid-western states.

In reply, please give full detail of past experience, age, etc. A personal interview at our expense is desirable. Reply Box No. 111, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

Outstanding Opportunity

Because so many sales leads (from our national advertising) are in territories not covered by us now, we are offering an unusually attractive opportunity to several successful, aggressive mfrs. reps. and salesmen now selling allied equipment lines. We are well-established manufacturer of complete line of infra-red electric baking & drying units, ovens with features unmatched by any other equipment. Unlimited earning possibilities on liberal commission plan. Write complete information: experience, lines handled, territory covered. DRIQUIK Div. Dry Clime Lamp Corp., Greensburg, Ind.

Opportunity Section

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This Opportunity Section is available for classified advertisements. For advertising rates and other information address:

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Compensation: Base salary, plus commissions based on sales; car allowance or car furnished, reimbursement of expenses; Profit Sharing Plan, a better than average opportunity.

If you qualify, please furnish a complete resume of employment history, age, etc. All replies confidential. Our employees are aware of this ad. Write Box 114, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

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POSITION OPEN — Chemist or Chemical Engineer. Must be familiar with the application and testing of organic finishes. Should have experience in shading. Must be familiar with the operation and control of phosphate coating equipment, pickle equipment, etc. Must have both laboratory and plant experience. Provide personal and experience data, and address the **Asst. Manager of Engineering, Gibson Refrigerator Co., Greenville, Mich.**

Experienced sterling silver and copper jewelry finisher. One who wants advancement and security. Must know latest methods of buffing, barrel tumbling, cleaning and high lighting, as well as anti-tarnish procedures. Write Maisel's, P. O. Box 1333, Albuquerque, New Mexico.

REPRESENTATIVES

Distributors or manufacturer's agents to sell ESBEC Field Engineered Barrel Finishing equipment compounds and abrasives—the fastest growing line on the market. Proven performance at highly competitive prices. Liberal discounts or commissions. Repeat sale items. Several choice territories now open. Give full particulars first letter. Will be held in strictest confidence.

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PRODUCT LITERATURE

53. Small Parts Dryer

Fast spin drying of small parts is described in a folder which is available from the New Holland Machine Co., Dept. PF-855, New Holland, Pa.

54. Hot Spray Corrosion Resistant Paint

Application recommendations for Tygon ATD Hot Spray Paint are contained in a bulletin which may be obtained from the United States Stoneware Co., Plastics and Synthetics Division, Akron 9, Ohio. Information is included on surface preparation, primers, care of equipment, drying time, and repairs to weak areas of the dry film.

55. Polishing Wheels

Information on rubber bonded polishing wheels is contained in a bulletin which may be obtained from the Sandusky Abrasive Wheel Co., 4004 Park, Sycamore, Ill. A table gives specifications for each wheel in the line.

56. Finishing Ovens

Case histories of problems solved by the installation of Moco Finishing Ovens are given in a bulletin available from the Michigan Oven Co., 415 Brainard, Detroit 1, Michigan. Specific details as to the problem and the solution are given in each case.

57. Automatic Electrostatic Finishing

Descriptive literature on the Ashdee Electrostatic Finishing System is available from Ashdee Electrostatic Products, Inc., 18032 Dixie Hghy., Homewood, Ill.

58. Electrocleaner for Brass

The Diversey Corp., 1820 Roscoe St., Chicago 13, Ill., has available Bulletin No. 53A describing Diversey No. 101 electrocleaner, and giving information on this alkaline product, which is used for reverse or direct current electrocleaning of brass.

59. Automatic Plating Machine

Operational details and complete technical information on automatic plating are given in literature which may be obtained from Wagner Brothers, Inc., 432 Midland, Detroit 3, Mich.

60. Protective Coating for Metals

Fidelity Chemical Products Corp., 470-474 Frelinghuysen Ave., Newark, N. J., has announced the availability of a brochure on Laqua, a coating for metals that preserves chemically cleaned surfaces obtained directly after electroplating or a chemical cleaning operation.

61. Fast Cutting Abrasive Compound

Esbec No. 619, a Color Identified (light gray) Barrel Finishing Compound for deburring and grinding of the ferrous alloys, brass, and aluminum is described in a data sheet being distributed by Tumbling Sales & Service Co., 18 Beech St., Byram, Conn. Characteristics of the compound, suggestions for its proper use, correct operating concentration, and other factors are included.

62. Color Anodizing of Aluminum

"Technical Advisor" No. 31, available from Reynolds Metals Co., 2500 S. Third St., Louisville, Ky., presents recent developments in color anodizing aluminum for use in architectural applications.

Colored aluminum, it is pointed out, is made possible by treating the anodized aluminum with sunfast dyes that do not fade upon continued exposure to sun and weather.

Information is presented on sintered aluminum powder and "Hinduminium 100," the Sanford process, recommendations for solving a severe abrasion-corrosion problem, aluminum-coated wire and its applications, and a new method of litho-coloring aluminum.

63. Electric Heaters

Bulletin No. 750 covering Chromalox electric heaters for use in electroplating is available from Edwin L. Wiegand Co., 7552 Thomas Blvd., Pittsburgh 8, Pa. Illustrations and descriptions of several types of electric heaters are presented.

64. Zincilate

Details in regard to Zincilate anti-corrosion coatings are given in Bulletin Z-454, available from Industrial Metal Protectives, Inc., 401 Homestead Ave., Dayton 8, Ohio. Information on characteristics of the coating formed, resistance of the finished coating to various conditions, surface preparation, and drying time is given in chart form.

65. Pre-cut Masks

Information on Brady Pre-cut masks is available from the W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 12, Wis. These masks are cut to special shapes, and are adhesive backed, so that they may be used for masking apertures and in other selective masking during painting and baking.

66. Trichlorethylene Degreasing Solvent

Outstanding features of Nialk Trichlorethylene Degreasing Solvent for use as a dip, or in vapor degreasing are enumerated in literature which may be obtained from Niagara Alkali Co., 60 E. 42nd St., New York 17, N. Y.

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67. Waste Treatment Information

Processes for treating highly toxic cyanides and chromium compounds in industrial wastes are described in Bulletin 90-242-10, available from Fischer & Porter Company, Hatboro 35, Pa.

68. Buffing and Finishing Compounds

Technical bulletin T-5, describing buffing and finishing compounds, may be obtained from The Globe Compound Co., Inc., Waterbury-Bristol Rd., Waterbury 12, Conn. This catalog lists and describes both bar and liquid abrasive compositions; it discusses stainless steel compounds for both cutting and coloring applications, R-41 Red Rouge for coloring non-ferrous metals, and Globe No. 11-A Tripoli.

69. Steam Trap

Bulletin No. 360-A, available from the Sarco Company, Inc., Empire State Bldg., New York, N. Y., gives detailed information on the operating characteristics of this trap, which incorporates design features which are said to prevent loss of prime.

70. Reprints on Waste Disposal

A fully automatic waste disposal system used in the automobile industry for destroying cyanide and neutralizing acid-alkali waste is one of the items described in the group of article reprints offered by Frederic B. Stevens, Inc., 1800 18th St., Detroit 16, Mich. Another article detailing helpful hints on cutting electroplating costs with proper waste disposal is included.

71. Protecting Buffing Fixtures

Fusion Metal Coating Co., Inc., 25493 W. Eight Mile Rd., Detroit 19, Mich., has available a bulletin entitled, "General Information and Procedure Sheets on Fusecoat 'T'." This booklet includes a section describing the Fusecoat process as applied to protecting buffing and polishing fixtures from abrasion.

72. Immersion Heater

A folder covering the Glo-Quartz Type "U" electric radiant immersion heater may be obtained from The Glo-Quartz Electric Heater Co., Inc., Willoughby, Ohio. Complete information on the features and advantages of this heater is presented.

73. Water Softeners

Bulletin 210, available from Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill., describes and illustrates small zeolite industrial and commercial water softeners. Also presented in this folder is a table giving a complete range of sizes and capacities.

74. Adhesives, Coatings, Sealers

An illustrated folder on the use of "3M" brand adhesives, coatings and sealers for joint-sealing, and bonding and protecting sheet metal in manufacturing is available from the Minnesota Mining and Manufacturing Co., Adhesives and Coatings Div., Dept. 25-44, 411 Piquette Ave., Detroit 2, Mich.

75. Metal Cleaning Compound

A bulletin describing Turco Prosolv B cleaning compound may be obtained from Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif. Complete information and directions on how to use Prosolv B are presented in this pamphlet.

76. More Efficient Finishing

Improved efficiency that results from conveyorized finishing systems is described in Bulletin 51C, which may be obtained from the Despatch Oven Co., 619 S. E. 8th St., Minneapolis, Minn.

77. Crack-Free Chromium

The United Chromium Division of Metal & Thermit Corporation, 100 E. 42nd St., New York 17, N. Y., has available a bulletin, CFC-1, describing the Unichrome Crack-Free Chromium plating process.

78. Pressure Type Filter

Bulletin HH 103, available from U. S. Hoffman Machinery Corp., Dept. PF, 105 Fourth Ave., New York 3, N. Y., describes operation of the Hoffman-Hygrade self-cleaning pressure filter, designed to remove sludge formed by dissolving electrodes and prevent dust, dirt and oil contamination of metal parts during plating operations.

79. How to Strip Paint

A booklet entitled "How to Strip Paint" may be obtained from Oakite Products, Inc., 20 Rector St., New York 6, N. Y. Efficient methods of stripping paint from various objects, and the strippers to use for removing hard-to-strip finishes are described.

80. Rectifier Information

Bulletin 5500, being distributed by Ther Electric & Machine Works, 13A S. Jefferson St., Chicago 6, Ill., contains data on rectifier arrangements, and valuable installation hints.

81. Coils and Strand for Vacuum Metalizing

Detailed information on the advantages of Sylvania tungsten coils and strand for use in vacuum metalizing is given in a booklet available from Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

82. Monel Metal for Pickling

A booklet entitled "5-Way Savings in Pickling" is available from The International Nickel Co., Inc., 67 Wall St., New York 5, N. Y. Information on resistance of Monel metal to specific acids is given, and advantages in strength and easy forming are described.

83. Barrel Plating Equipment

Bulletin PB 109, being distributed by the Hanson-Van Winkle-Munning Co., Matawan, N. J., gives technical information on Mercil-Type Tanks and Cylinders for barrel plating.

84. Buff Selector

A Sisal Buff Selector which instantly determines type of buff, size and spindle speed recommended for practically every Sisal buffing job, is available from American Buff Co., 2414 S. LaSalle St., Chicago 16, Ill.

85. Diamond Chemicals

"Your Handy Checklist of Helpful Diamond Literature," is the title of a brochure available from Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio. This compilation of technical and non-technical information has been prepared as a guide to available literature covering Diamond chemicals.

86. Polishing Machine

Information on Micro-Polish is given in a brochure being offered by the Murray-Way Corp., P.O. Box 180, Maple Rd. East, Birmingham, Mich. Advantages of this method in product uniformity, improved product appearance, and elimination of dust are given.

87. Flow Coating

Bulletin 9P-J7, available from George Koch Sons, Inc., Evansville, Ind., shows advantages of flow coating, and describes how this system can be adapted to present finishing systems.

88. Tumble Finishing

Various sizes of two compartment barrel finishing machines and accessories for barrel finishing are shown in a catalog available from the Grav-I-Flo Corp., Dept. PF-9, Sturgis, Mich.

89. Electrocleaner

Improvement of decorative finishes through better cleaning, using Cowles FE Cleaner in electrocleaning tanks is discussed in technical data available from the Cowles Chemical Co., Metal Cleaner Dept., 7016 Euclid Ave., Cleveland 3, Ohio.

90. Abrasive Wheels for Grinders

Simonds Abrasive Co., Tacony & Fraley Sts., Philadelphia 37, Pa., has available a catalog describing Simex Red Wheels for use on portable disc type and right angle type portable grinders.

91. Prosealing

A bulletin describing Prosealing may be obtained from Promat Division, Poor & Co., 851 S. Market St., Waukegan, Ill. This process is used for protection of aluminum, plated zinc and cadmium.

92. Felt Polishing Wheels

Versatility of felt wheels in polishing applications is discussed in a catalog being distributed by Bacon Felt Co., 447 W. Water St., Taunton, Mass. Hints on how to improve finishing operations using felt wheels are included.

93. Vapor Degreasing Manual

A comprehensive degreasing manual being distributed by Circo Equipment Co., 128 Central Ave., Clark (Rahway), N. J., includes the latest information on efficient use of vapor degreasing.

94. Viscometer

Gardner Laboratory, Inc., Bethesda 14, Md., has available a bulletin covering the Gardner "One Shot" Viscometer, a device for measuring the viscosity of liquids in a disposable paper cup.

95. Rollacoating

Rollacoating machinery designed for high production, and equipment for intermittent runs are described in literature which may be obtained from the Gasway Corp., 6459 N. Ravenswood Ave., Chicago 26, Ill.

96. Degreasing Solvent

Technical data and advantages of using Triclene D in soil removal by degreasing are given in literature available from E. I. du Pont de Nemours & Co., Inc., Electrochemicals Dept., Wilmington 98, Del.

97. Alkali Cleaning Units

Full information on the uses of Stutz Alkali Cleaning and Rinsing Machinery is given in a catalog being distributed by the George A. Stutz Mfg. Co., 4410 Carroll Ave., Chicago 24, Ill.

98. Expander Wheel

Advantages of the slotted Cosmo Expander Wheel, improved quality and efficiency in grinding and polishing, are shown in descriptive literature available from Chicago Rubber Co., Inc., 2620 Clybourn Ave., Chicago 14, Ill.

99. Precision Barrel Finishing

Facts on the Roto-Finish method of maintaining exact tolerances on precision parts with no significant dimensional change are given in a catalog which may be obtained from Roto Finish Co., 3704 Milham Rd., Kalamazoo, Mich.

For Free Literature Circle Numbers on Card Inside Front Cover

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